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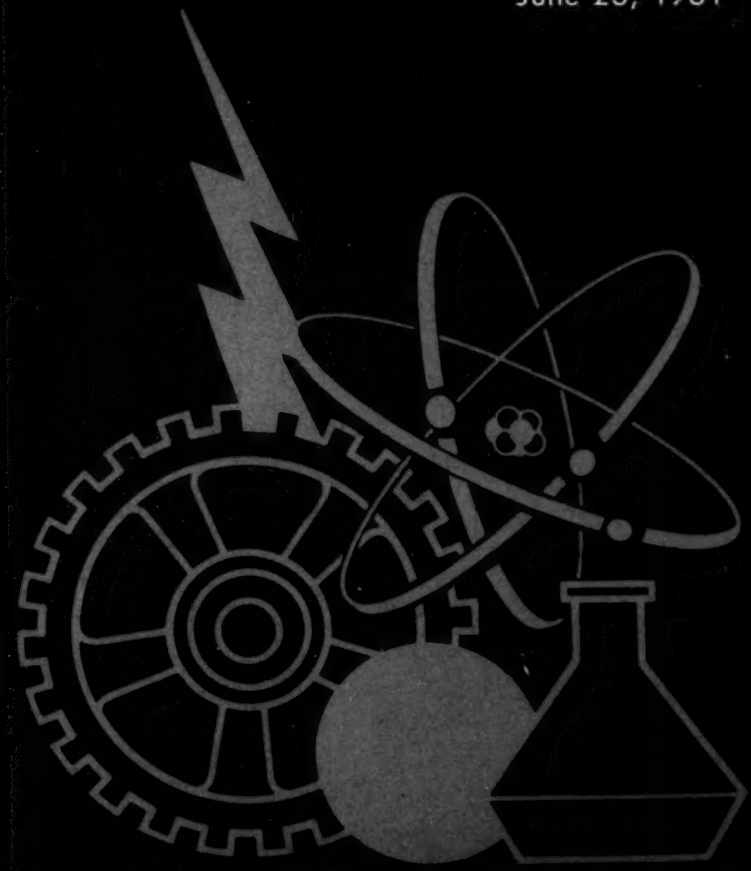

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DEPARTMENT
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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

June 23, 1981 Volume 1007 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,812,735, Re. S.N. 247,921, Filed Mar. 26, 1981, Cl. 74/371, TRANSMISSION, Roland L. Von Kaler, et al., Owner of Record: *Tecumseh Products Co., Tecumseh, Mich.,* Attorney or Agent: George A. Gust, et al., Ex. Gp.: 352

3,984,947, Re. S.N. 244,200, Filed Mar. 16, 1981, Cl. 52/1, ROOF STRUCTURE INCLUDING A ONE-WAY VAPOR VENT, Francis J. Patry, Owner of Record: *Johns-Manville Corp., Arapahoe, Colo.,* Attorney or Agent: Robert M. Krone, et al., Ex. Gp.: 254

4,080,413, Re. S.N. 241,999, Filed Mar. 9, 1981, Cl. 264/29.2, POROUS CARBON FUEL CELL SUBSTRATES AND METHOD OF MANUFACTURE, George K. Layden, et al., Owner of Record: *United Technologies, Corp., Hartford, Conn.,* Attorney or Agent: Harry J. Gwinnell, Ex. Gp.: 147

4,142,679, Re. S.N. 241,087, Filed Mar. 6, 1981, Cl. 237/54, BUILDING HEATING SYSTEM, Donald C. McKillop, Sr., Owner of Record: *Inventor,* Attorney or Agent: J. Michael Rosso, Ex. Gp.: 344

4,147,176, Re. S.N. 249,345, Filed Mar. 31, 1981, Cl. 137/102, DIAPHRAGM ASSEMBLY FOR THE DEMAND REGULATOR OF A BREATHING APPARATUS, Raymond A. Christianson, Owner of Record: *Inventor,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 341

4,174,169, Re. S.N. 234,388, Filed Feb. 13, 1981, Cl. 354/324 ANTI-OXIDATION FLUID REPLENISHER CONTROL SYSTEM FOR PROCESSOR OF PHOTOSENSITIVE MATERIAL, Theodore A. Melander, et al., Owner of Record: *Pako Corp., Minneapolis, Minn.,* Attorney or Agent: David R. Fairbairn, et al., Ex. Gp.: 211

4,195,916, Re. S.N. 248,458, Filed Mar. 7, 1981, Cl. 350/346, LIQUID CRYSTAL COMPOUNDS, David Coates, et al., Owner of Record: *The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland London, England,* Attorney or Agent: Ellsworth H. Mosher, et al., Ex. Gp.: 257

4,198,873, Re. S.N. 250,914, Filed Apr. 3, 1981, Cl. 74/217 B, SPEED CHANGING DEVICE FOR A BICYCLE AND THE LIKE, Masashi Nagano, et al., Owner of Record: *Shimano Industrial Co., Ltd., Osaka, Japan,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 352

4,223,504, Re. S.N. 243,277, Filed Mar. 13, 1981, Cl. 52/479, WALL SYSTEM, Timothy K. Potter, et al., Owner of Record: *Gotaverken Aluminum AB., Goteborg, Sweden,* Attorney or Agent: Elliott I. Pollock, et al., Ex. Gp.: 354

4,236,086, Re. S.N. 247,839, Filed Mar. 26, 1981, Cl. 307/149, APPARATUS FOR THE DETECTION AND PROCESSING OF ELECTRIC SIGNALS, Peter Hoebel, Owner of Record: *Siemens Aktiengesellschaft. Berlin and Munich, Germany,* Attorney or Agent: James Van Santen, et al., Ex. Gp.: 217

4,239,635, Re. S.N. 243,455, Filed Mar. 13, 1981, Cl. 252/34, NOVEL DIAMIDE AND LUBRICANTS CONTAINING SAME, Walter E. Rieder, Owner of Record: *Cincinnati Milacron, Inc., Cincinnati, Ohio,* Attorney or Agent: Jack J. Earl, et al., Ex. Gp.: 116

4,245,551, Re. S.N. 248,812, Filed Mar. 30, 1981, Cl. 98/115, COATING BOOTH FOR ELECTROSTATIC APPLICATION OF PULVERIZED MATERIALS, Adolf Berkmann, Owner of Record: *Nordson Corp., Amherst, Ohio,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 344

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

Rules of Practice in Patent Cases; Reexamination Proceedings

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending its rules of practice in patent cases to provide procedures for the reexamination of patents. Public Law 96–517 amended the patent act to authorize reexamination proceedings as a means for improving the quality of United States patents. The Patent and Trademark Office intends, through this amendment of its rules, to provide patent owners and the public with guidance on the procedures the Office will follow in conducting reexamination proceedings.

DATE: Effective date: July 1, 1981.

FOR FURTHER INFORMATION CONTRACT: Mr. R. Franklin Burnett by telephone at [703]557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks. Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This rule change relates to a procedure for reexamination of patents as provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981.

Background

A notice of proposed rulemaking was published in the Federal Register on Jan. 13, 1981 at 46 FR 3162-3175 and in the *Official Gazette* on Feb. 17, 1981 at 1003 O.G. 36-47.

The proposed rulemaking set forth two somewhat distinct procedures directed towards determining and improving the quality and reliability of United States patents. The procedures were (1) provisions for reexamination of patents as provided for in Pub. L. 96-517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) provisions for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

An oral hearing was held on Apr. 16, 1981. Fifty-nine written letters and statements were submitted. Nineteen persons testified at the oral hearing which resulted in 107 pages of testimony.

Discussion of General Issues Involved

After careful consideration of the comments which have been received, the part of the proposed rulemaking relating to reexamination of patents as set forth in new Chapter 30 which Pub. L. 96-517 added to Title 35 of the United States Code [35 U.S.C. 301-307] is being adopted with certain changes. The remainder of the proposal relating to inter partes protest proceedings is not being adopted.

The comments relating to the proposed rules for inter partes protest proceedings were generally mixed, with a majority of persons and associations submitting comments either opposed to these proposed rules or indicating that adoption of the proposed rules should be delayed or deferred for further study and consideration.

A number of comments were received requesting some further changes to the rules be made. The thrust of some of the suggested changes would be to remove public access to reissue applications and to limit public participation in the examination of reissue applications. The changes suggested included restoring the rules in these areas to essentially their pre-1977 form. In particular, it was suggested that §1.175 be amended to eliminate paragraph (a)(4). These changes were not a part of the published proposal and are not being adopted at this time. Their consideration and adoption would require a new notice of proposed rulemaking.

Further, since the subject matter of reissue applications is already known to the public the necessity for maintaining them in confidence is not compelling. The elimination of paragraph (a)(4) of §1.175 would not have a significant effect since less than one-fourth of the currently filed reissue applications are based solely upon the 1977 change to §1.175. Under the present circumstances, it is more appropriate to defer any consideration of such changes until this issue has been reviewed further and possibly until some experience is gained under the rules adopted herein relating to reexamination. Such experience may indicate the desirability of either retaining the 1977 change to §1.175, deleting the 1977 change, or making different changes in the rules.

The comments relating to reexamination were generally favorable with most of the comments indicating general approval of the proposed rules. Among the more often mentioned specific comments were suggestions relating to public notice of reexamination requests and/or orders. A number of comments also related to requester and/or third party participation in the reexamination proceeding and also to the scope of the proceeding.

After careful review of the comments and suggestions it has been decided to adopt the suggestions relating to the publication in the *Official Gazette* of requests for reexamination for which the fee has been paid. In addition, any reexaminations ordered at the initiative of the Commissioner will also be announced in the *Official Gazette.* The announcement will include at least the date of the request or any Commissioner initiated order, a reexamination request or order control number, the patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

The suggestions and comments relating to more participation in the reexamination proceeding by the requester and third parties have been adopted only to a limited degree. The requester will in general have only that participation provided by the rules as proposed. However, any citations under §1.501 by any person will be entered in the patent file up until the date of an order to reexamine. The essentially ex parte nature of the proceeding is believed to be in keeping with the spirit and intent of the statute even though the statute does not require ex parte proceedings. Ex parte proceedings will minimize the costs and other effects of reexamination requests on patentees, especially individuals and small businesses.

The scope of the reexamination proceeding which was originally proposed has been essentially adopted in the final rules. The suggestions that the rules be broadened to include other issues have not been adopted since the other issues would unduly complicate the proceedings, raise the expense of the proceedings and raise questions whether such issues can be considered under Pub. L. 96-517.

Discussion of the Major Specific Issues Involved

The rules relating to reexamination proceedings are directed to the procedures set forth in new Chapter 30 of Title 35 of the United States Code (35 U.S.C. 301-307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings. Present §§1.1, 1.5, 1.11, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1.196, 1.197, 1.231, 1.248, 1.301, and 1.303 are amended to provide for reexamination procedures. A new "Subpart D-Reexamination of Patents" includes new §§1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of §1.291, relating to prior art citations in patents, is deleted, since provisions therefor appear in §1.501.

Section 1.1, as amended, provides for communications relating to reexamination proceedings to be marked "Box Reexam" to speed internal Office mail processing. No comments were received concerning this section. The proposal has been modified to indicate that only requests should be marked "Box Reexam".

Section 1.5, as amended, provides for all letters relating to a reexamination proceeding to be identified by patent number and a reexamination request control number. No comments were received concerning this section. Section 1.5 has been modified to also include reference to the Group Art Unit and the examiner, if known.

Section 1.11, as amended, provides for all papers made of record in reexamination proceedings to be open to inspection and copying by the public. Eighteen comments were received relating to publication of a notice in the *Official Gazette.* A new paragraph (c) has been added which provides for the publication of requests with sufficient fees paid and orders initiated by the Commissioner. Proposed paragraph "c" has been adopted as paragraph "d".

Section 1.33, as amended, has a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed. Four comments were received on this section relating to whom the mail should be addressed. One proposal, which suggested use of the current address of the attorney or agent of record, was adopted.

Section 1.34, as amended, provides for the appointment of an attorney or agent in a reexamination proceeding. Only one comment was received on this section which proposed a rule specifically allowing attorneys to file requests without identifying their clients. Since any person may request reexamination, such a rule is not felt necessary.

Section 1.36, as amended, provides for the revocation and withdrawal of powers of attorney in a reexamination proceeding. No comment was received. Section 1.36 is adopted as proposed with an additional change which added "or her" near the end.

Section 1.104, as amended, broadens the present section to also include reexamination. Three comments were received on §1.104. All comments indicated that the examiner should not make a prior art search. Although no complete new search by the examiner is required, the use of patents and printed publications in addition to those submitted by the requester is clearly indicated in 35 U.S.C. 303(a). According, §1.104 is adopted as proposed.

Section 1.107, as amended, provides for the citation of prior art by the examiner in a reexamination proceeding. The amended rule also refers to foreign published applications, as well as patents. No comments were received on this section. It is adopted as proposed.

Section 1.109, as amended, provides for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims. No comments were received on this section. Except for a clarifying change in language, it is adopted as proposed.

Section 1.111, as amended, provides for replies by the patent owner in a reexamination proceeding. One comment was received which suggested a clarification. The suggestion was adopted. Other non-substantive changes have been made in the proposed section to shorten the sentences for clarity.

Section 1.112, as amended, provides for reexamination and reconsideration of the patent under reexamination after responses by the patent owner. Three comments were received on this section.

The wording has been changed as suggested to avoid any confusion between "reexamination" and "reexamine". The sentences have also been shortened for clarity.

Section 1.113, as amended, provides for a final rejection or action in a reexamination proceeding. One comment was received which pointed out a possible conflict between the amendment rights of section 305 and the final rejection of section 1.113. No problem is seen in this regard because of the provision of section 305 which states that "reexamination will be conducted according to the procedures established for initial examination." The section is adopted as proposed with the last sentence being divided into two sentences for clarity.

Section 1.115, as amended, provides for amendments by the patent owner in a reexamination proceeding. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity.

Section 1.116, as amended, provides for amendments after final action in reexamination proceedings. One comment was received which was the same as that mentioned and responded to in Section 1.113 above. The sentences have been shortened for clarity.

Section 1.121, as amended, contains a new paragraph (f) which requires a complete copy of any new or amended claim when presented during reexamination proceedings. Two persons commented on this section. One proposed side-by-side presentation of amended and original claims. The other proposed that exactly the same procedure be used as is now in effect for amending reissue claims. Neither suggestion was adopted since neither lends itself to printing only the amended claims in a certificate as easily as the procedure set forth in §1.121(f). The proposed section was revised to also provide for the amendment of the description. In addition, the last three sentences of §1.510(e) have been inserted as the last three sentences of §1.121(f) in order to provide a more complete description therein of the manner of making amendments, including the numbering of claims, the restriction on scope of the claims and the prohibition against the introduction of new matter.

Section 1.191, as amended, provides for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306. One comment was received on proposed §1.191 which urged that the requester should also be entitled to appeal. This proposal was not adopted because it is not provided for in the law and could result in harassment if permitted. The section is adopted as proposed except that "primary" contained in the existing rule is retained.

Section 1.192, as amended, provides two months from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding. Five comments were received relating to §1.192 which proposed that the period for filing an appeal brief in a reexamination appeal be two months as in other appeals. The proposed rule has been adopted with the suggested two month period. The sentences have been shortened for clarity.

Section 1.196 and §1.197 are being amended to refer to "appellants", which is a term which includes both applicants and patent owners.

These two sections were not published for comment, however, the issues involved were presented in proposed §§1.191 and 1.192. Paragraph (c) of §1.197 has also been rewritten for clarity.

Section 1.231(a)(1), as amended, provides for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Three comments were received concerning §1.231. All comments related to when interference or reexamination proceedings would be suspended. Section 1.565 provides basis for such suspensions. Decisions will be made on a case by case basis, depending on the particular fact situation. The sentences in §1.231(a)(1) have been shortened and rearranged for clarity.

An amendment was proposed to delete the last two sentences of §1.247 relating to proof of service. No comments were received concerning this section but, on reconsideration, no need for such deletion is felt necessary and no change is being adopted.

Section 1.248, as amended, includes a new paragraph (b) relating to methods of serving papers and proof of service. No comments were received concerning this section. The section is adopted as proposed with minor changes for clarity and to conform to the Federal Rules of Civil Procedure.

Section 1.291, as amended, deletes paragraph (b). Former paragraph (b) dealt with the citation of prior art provisions. It was deleted since the provisions are now covered by §1.501. Five persons commented on §1.291. One comment relating to filing protests in reexamination proceedings was not adopted since such proceedings are ex parte in nature and are limited to consideration of prior art patents and printed publications cited by the public prior to the order. Two persons mentioned providing a procedure for citation of prior art by patentees. Citation of prior art by patentees is included in §1.501. The two other comments related to the content of protest proceedings, which are not part of this final rule. Section 1.291 is adopted as proposed except that the paragraph designation of (c) is not being changed.

Section 1.301, as amended, provides for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals. Four comments were received relating to §1.301. One person suggested the insertion of "any" as the fourth word in the section. This suggestion was adopted. The other three comments related to appeals in inter partes protest proceedings which are not a part of this promulgation. Section 1.301 is adopted as proposed with only the above mentioned change.

Section 1.303, as amended, provides for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings. No comments were received concerning this section. The changes from the proposal are the insertion of "any" as the fourth word in the section as suggested in §1.301 and the addition of, "306" to the title.

New §1.501 provides a system for citation of patents and printed publications to the Patent and Trademark

Office for placement in the patent file by any person during the period of enforceability of the patent in accordance with 35 U.S.C. 301. Seventeen persons commented on §1.501. Nine comments indicated that citations should be limited to patents or printed publications. Six comments indicated that persons citing art should be required to apply it to at least one claim. Three persons held the opposite view. The final rule wording provides for citations limited to patents and printed publications where the person making the citation states the pertinency and applicability of the citation to the patent and the bearing the citation has on the patentability of at least one claim of the patent. The final rule provides that a citation made by the patent owner may include an explanation of how the claims differ from the prior art cited. Any citations which include items other than patents and printed publications will not be entered in the patent file. This does not, of course, limit in any manner the kinds and types of information which can be relied upon in protests against pending patent applications, whether such be original applications or reissue applications. Four persons stated that a separate letter requesting confidentiality should be required in cases desiring confidentiality. This provision was not considered to be necessary. One comment requested clarification of the term "period of enforceability of a patent." The meaning of this term appears to be clear since it includes any period for which recovery can be had for infringement. Under usual circumstances, this would be the term of the patent plus the six years provided by 35 U.S.C. 286. Five comments were received relating the paragraph (c) concerning service of citations on the patent owner. The wording has been clarified. A suggestion was made that prior art copies and translations of non-English documents be required. This suggestion was not adopted since such documents are not absolutely essential until a request for reexamination has been filed. However, if the person citing the patents or printed publications desires that they be considered in any subsequent reexamination proceedings, copies and any necessary English translation should be included with the citation. A proposal was also made to charge a fee to prevent harassment. This proposal was not adopted since the mere citation of prior art is not considered to constitute harassment. A suggestion was made to change the title of the section. This suggestion was adopted in slightly modified form.

New §1.510 sets forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302. Paragraph (a) of new §1.510 limits the period for such request to the period of enforceability of the patent for which the request is filed and requires payment of the fee for requesting reexamination. Paragraph (b) of new §1.510 indicates what each request for reexamination must include. Paragraph (c) of new §1.510 indicates under which conditions a request for reexamination will be considered. Paragraph (d) of new §1.510 indicates the date on which the entire fee is received will be considered to be the date of the request for reexamination. Upon reconsideration of the paragraph as proposed, it was considered more appropriate to base the filing date of the request for reexamination on the receipt of the fee for requesting reexamination rather than include other matters. Proposed paragraph (d) has been amended accordingly and is adopted. Paragraph (e) of new §1.510 covers amendments which a patent owner can propose. Such amendments can accompany a request for reexamination by the patent owner. The paragraph, with changes in wording for clarity, is adopted as proposed. A new paragraph (f) was added to clarify that requests for reexamination may be filed by attorneys or agents on behalf of a requester. Nineteen persons commented on §1.510. One person inquired as to whether confidential requests would be accepted. In response thereto, §1.510 provides that any person may file a request for reexamination. That person's name will not be maintained in confidence. One suggestion was made to permit comment and rebuttal before the decision under §1.515. No need for such a procedure is seen since the only question to be considered is whether or not a substantial new question of patentability has been raised. An opportunity for comment and rebuttal is provided after the issuance of the order. One comment was received which desired provision for supplemental requests at a reduced fee. This proposal was not adopted since it is felt that all requesters should share equally in the cost. One comment was received which proposed that duplicate copies of the request be filed in the Office so that one copy would be available for public inspection at all times. This proposal was not adopted since it would appear to create more problems than it would solve. One comment was received that only "readily available" translations should be required. It is felt that if a document is considered to be sufficiently pertinent to request reexamination, that an English translation should be provided to insure complete and proper consideration. A suggestion was made relating to paragraph (b)(5) that direct service be limited to registered patent attorneys. No need for such a restriction is seen. Various other comments relating to procedures were considered but were not adopted.

New §1.515 relates to a determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303. Paragraph (a) of new §1.515 requires that the determination be made within 3 months of the filing date of the request. Paragraph (b) of new §1.515 refers to the refund provisions. Paragraph (c) of new §1.515 provides for review by petition to the Commissioner of any decision refusing reexamination. Seven persons commented on §1.515. Several comments were received suggesting that the term "reexamination" should be dropped before "examiner". This proposal was adopted. Several persons requested that all art cited in the patent file at the time of the order under §1.525 be considered when deciding whether a substantial new question of patentability is presented in the request. This is possible under the provision of §1.515(a) which permits "consideration of other patents or printed publications", but is not required insofar as prior art not relied upon in the request is concerned. One person suggested that "is" be changed to-affirms-in paragraph (c). This proposal has been adopted. One commentor questioned whether a right to review was available under paragraph (c) if reexamination was ordered. No right to review exists in such a case because all claims will be reviewed in view of all prior art during the reexamination under §1.550.

New §1.520 provides for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303. Six persons commented on §1.520. One comment was received that indicated that the section did not include a reference to patents "discovered by the Commissioner" which is contained in 35 U.S.C. 303(a). This phrase has been added to the rule. A request was made that the sentence "Normally requests from outside-will not be considered." be deleted from the rule. The sentence is being retained since the rule wording provides an easy reference for Office policy. Two comments were received that indicated a desire to have any decisions not to reexamine in Commissioner initiated situations be made part of the patent file. This proposal was not adopted since the basis for not reexamining may involve many policy issues in addition to whether a substantial new question of patentability exists in the case. If all papers in such a case would be made part of a file, it may lead to conclusions that there are no new questions of patentability when this question may not have been addressed because the reexamination was not ordered for other reasons such as little or no interest in a patent about to expire. One comment stated that the section safeguards the rights of the patentee. The language referring to the designation and delegation of authority to appropriate Patent and Trademark Office officials is deleted as unnecessary since the Commissioner's authority to designate and delegate is implicit and understood.

New §1.525 provides for ordering reexamination where a substantial new question of patentability has been found pursuant to §§1.515 or 1.520. Six comments were received relating to §1.525. One comment was made that the attorney should be able to return notices

to the sender if he is unable to contact the patent owner. This topic has not been added to the rules but will be handled on a case by case basis. One comment requested that the patent owner have the option to request that the reexamination be performed by an examiner (1) other than the original examiner, or (2) other than the examiner who issued the order. Comments were also received on both sides of the question as to whether the original examiner should conduct the reexamination. In response, it would appear to be inappropriate to allow an interested party to select the examiner. Under the section, the only limitation placed on the selection of the examiner by the Office is that the same examiner whose decision was reversed on petition ordinarily will not conduct the reexamination. Paragraph (b) has been changed to provide that the notices published in the *Official Gazette* will be considered to be constructive notice.

New §1.530 relates to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificate under §1.570 and 35 U.S.C. 307 is issued. Nine comments were received on §1.530. Several persons felt that the patent owner should be allowed to comment before the decision under §1.515 is made. Providing for such a comment would delay the decision under §1.515 which must be made within three months following the filing date of the request. Further, no need is seen for a statement relating to whether a new question of patentability is present since the patent owner has the opportunity to address any issues of patentability only after the first Office action. One comment questioned whether paragraph (d) also related to the description. This paragraph has been amended to clarify the matter. One person questioned whether an amendment could be filed with a statement. Paragraph (b) clearly answers this question in the affirmative. Several comments requested more time than two months for the patent owner to file a statement. In reply, the law in section 304 indicates that a reasonable period of not less than two months be provided for the patent owner's statement. If the period is too short in particular situations, extensions of time can be requested. It is felt that two months should be retained in the rule in view of the "Special Dispatch" required in reexamination cases. The proposed second sentence of paragraph (b) has not been adopted since §1.525(b) now provides for the publication of notices of the filing of all requests which are accompanied by the proper fee.

New §1.535 provides for reply by the reexamination requester to the statement under §1.530 of the patent owner and for service on the patent owner of any such reply. The last sentence of proposed §1.540 has been added as the last sentence of §1.535. Five persons commented on §1.535. Four persons indicated that the requester should be given additional opportunity to comment. The reasons for the limited participation are that it is all that is required under the law, it prevents to a great degree, harassment of a patent owner, it results in a less expensive proceeding for all parties, and it results in an earlier conclusion of the proceedings.

New §1.540 relates to the consideration of statements under §1.530 and replies under §1.535. One comment was received that the phrase "may result in their being refused" was worded too loosely. In the absence of any specific suggestion, the proposed wording is considered to be adequate and is adopted as proposed. In addition, it is appropriate that the Office retain discretion as to consideration in such cases.

New §1.550 covers the basic items relating to the conduct of reexamination proceedings. These proceedings basically follow the same procedures used for examining patent applications. The patent owner will be required to serve the reexamination requester with any response by the patent owner to the Office, in order to remove the necessity of the requester having to continuously monitor the file wrapper. Fourteen persons commented on §1.550.

Several persons commented that they felt that at least some input by third parties should be permitted. Paragraph (e) has been revised to permit third party input up until the time of the order. Several comments were received that the periods for response should be extended to be similar to those in regular application Office actions. Although problems may arise in certain cases and extensions of time may be granted, it is felt that relatively short response times are necessary in order to process reexaminations with "special dispatch." A question was raised as to the effect of failure to respond to an Office action. Paragraph (d) has been amended to clarify this matter.

New §1.552 covers the scope of reexamination in a reexamination proceeding. While it is not intended that the examiners will routinely complete a new search when conducting reexamination, the examiners will be free to, and will, very likely, conduct additional searches and cite and apply additional prior patents and publications when they consider it is appropriate and beneficial to do so. Insofar as the actual reexamination is concerned, the examination as to original patent claims is only on the basis of patents or printed publications. However, narrowed amended claims or new claims limited to the original disclosure will also be examined for compliance with other sections of the statute (35 U.S.C. 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter. New §1.552 also provides that questions relating to matters other than those identified in paragraphs (a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved. Ten persons commented on §1.552. Several persons commented that the question of fraud should be considered in reexamination proceedings. Comments were also received that the proceedings should be limited to patents and printed publications. The rules have been written to follow the statute which speaks only to reexamination based on patents and printed publications. Mixed comments were also received concerning the retention of the second sentence of paragraph (c). The paragraph is being adopted as proposed with the addition of a reference to the fact that the examiner will note the existence of unresolved questions in an Office action. In addition, the phrase "raised or" has been deleted from paragraph (c) as unnecessary.

New §1.555 covers the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent. Nine persons commented on §1.555. Four persons supported placing a duty of disclosure on the patent owner. One comment was received that an oath or declaration be required of the patent owner in a reexamination so as to minimize the appearance and occurrence of any fraudulent acts and to emphasize the patentee's obligation of candor. While the suggestion for an oath or declaration has not been adopted, §1.555 does place an obligation of candor on the patent owner insofar as bringing patents or printed publications to the attention of the Office is concerned. The necessity for an oath or declaration in addition to the obligation placed on the patent owner by §1.555 is not apparent at this time. Accordingly, the suggestion has not been adopted. Two persons felt the duty of disclosure should apply to both the patent owner and requester. This proposal was not adopted since no sanction could be easily applied against the requester who violated such a rule. One person suggested broadening the duty requirements to include information in addition to patents and printed publications. Although such a practice may be desirable, no need is seen to require information under the reexamination rules which cannot be used during the reexamination. One person felt that there should be no duty of disclosure requirement in reexamination proceedings since the Office will be considering specific prior art and the presence or absence of other prior art does not seem terribly relevant. This suggestion was not adopted since the issue of patentability is not limited to the specific

prior art presented and the duty to disclose is consistent with current practice under §1.56. The section is adopted as proposed except for the indication that prior art statements should be filed in accordance with §1.98. Also, the section has been divided into two sentences for clarity.

New §1.560 relates to the conduct of interviews in reexamination proceedings. Seven comments were received directed to §1.560. One comment requested elimination of interviews. This suggestion was not adopted since interviews have been found to be very helpful in resolving issues. Five comments were received which indicated that the requester should be permitted to attend all interviews. This suggestion was not adopted because of the otherwise ex parte nature of the examination. Two comments were received which indicated that interviews should be permitted before the first Office action. This suggestion was not adopted since such interviews would be held at a time when the Office has not yet taken a position on the allowability of the claims under reexamination. Section 1.560 is adopted as proposed.

New §1.565 provides for the Commissioner to determine which, if any, proceedings should be stayed, consolidated, or suspended, if concurrent proceedings involving the patent under reexamination are instituted or in progress. Four comments were received concerning §1.565. One comment pointed out the desirability of combining copending reexamination proceedings. This concept has been accepted and a new paragraph (c) has been added to cover this matter. Two comments voiced concern over the possibility of delay resulting from stayed, suspended or combined cases. Although some delay may result, it is felt that a resolution of all issues should occur at an earlier date. Decisions as to whether to delay or combine cases will be made on a case by case basis to minimize delays and to protect the interests of all parties concerned. One comment was made to allow the patent owner to comment prior to any decision to stay proceedings by the Commissioner. The desirability of such comment will be decided on a case by case basis and is not considered desirable for placement in the rules. The addition of paragraph (c) and the insertion of "is or" before "becomes" in the first sentence of paragraph (b) are the only changes from the proposed rule.

New §1.570 concerns the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate will cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable. Three commentors mentioned §1.570. Two persons questioned the statutory authority for paragraph (d). In response to the concern for statutory authority, it is the position of the Office that once all of the claims have been canceled from the patent, the patent ceases to be enforceable for any purpose. Accordingly, any pending reissue or other Office proceeding relating to a patent in which such a certificate has been issued will be terminated. This provides a degree of assurance to the public that patents with all the claims canceled via reexamination proceedings will not again be asserted. One commentor indicated that copies of the certificate should be part of subsequently sold copies of the patent. Such a practice is intended but is not being made part of the regulations.

Environmental, energy, and other consideration: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, Part I of Title 37 CFR is amended as set forth below.

1. Section 1.1 is revised to read as follows:

§1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

(a) All letters and other communications intended for the Patent and Trademark Office must be addressed to "Commissioner of Patents and Trademarks," Washington, D.C. 20231. When appropriate, a letter should also be marked for the attention of a particular officer or individual.

(b) Letters and other communications relating to international applications during the international stage and prior to the assignment of a national serial number should be additionally marked "Box PCT."

(c) Requests for reexamination should be additionally marked "Box Reexam."

Note.—§§1.1 to 1.26 are applicable to trademark cases as well as to national and international patent cases except for provisions specifically directed to patent cases. See §1.9 for definitions of "national application" and "international application." (Pub. L. 94—131, 89 Stat. 685)

2. Section 1.5 is amended by adding a new paragraph (d) to read as follows:

§1.5 Identification of application, patent or registration

* * * * *

(d) A letter relating to a reexamination proceeding should identify it as such by the number of the patent undergoing reexamination, the reexamination request control number assigned to such proceeding and if known, the group art unit and name of the examiner to which it has been assigned.

3. Section 1.11 is amended by adding new paragraphs (c) and (d) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.21 (x) has been paid, will be announced in the *Official Gazette.* Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the *Official Gazette.* The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

(d) All papers or copies thereof relating to a reexamination proceeding which have been entered of record in the patent or reexamination file are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.

4. Section 1.33 is amended by revising the heading and adding a new paragraph (c) to read as follows:

§1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

* * * * *

(c) All notices, official letters, and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent or record (see §1.34(b)) in the patent file at the address listed on the register of patent attorneys and agents maintained pursuant to §§1.341 and 1.347 or, if no attorney or agent is of record, to the patent owner or owners at the address or addresses or record. Amendments and other papers filed in a reexamination proceeding on behalf of the patent owner must be signed by the patent owner, or if there is more than one owner by all the owners, or by an attorney or agent of record in the patent file, or by a registered attorney or agent not of record who acts in a representative capacity under the provisions of §1.34(a). Double correspondence with the

patent owner or owners and the patent owner's attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent is of record and a correspondence address has not been specified, correspondence will be held with the last attorney or agent made of record.

5. Section 1.34 is revised to read as follows:

§1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this part and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his or her power of attorney, or authorization, duly executed by the person or persons entitled to prosecute an application or a patent involved in a reexamination proceeding, he or she is a principal attorney of record in the case. A principal attorney or agent, so appointed, may appoint an associate attorney or agent who shall also then be of record.

6. Section 1.36 is revised to read as follows:

§1.36 Revocation of power of attorney or authorization, withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his or her power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his or her own selection.

7. In §1.104, paragraphs (a) and (b) are revised to read as follows:

§1.104 Nature of examination, examiner's action.

(a) On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect both to compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.

(b) The applicant, or in the case of a reexamination proceeding, both the patent owner and the requester, will be notified of the examiner's action. The reasons for any adverse action or any objection or requirement will be stated and such information or references will be given as may be useful in aiding the applicant, or in the case of a reexamination proceeding the patent owner, to judge the propriety of continuing the prosecution.

* * * * *

8. Section 1.107 is revised to read as follows:

§1.107 Citation of references.

(a) If domestic patents are cited by the examiner, their numbers and dates, and the names of the patentees, and the classes of inventions must be stated. If foreign published applications or patents are cited, their nationality or country, numbers and dates, and the names of the patentees must be stated, and such other data must be furnished as may be necessary to enable the applicant, or in the case of a reexamination proceeding, the patent owner, to identify the published applications or patents cited. In citing foreign published applications or patents, in case only a part of the document is involved, the particular pages and sheets containing the parts relied upon must be identified. If printed publications are cited, the author (if any), title, date, pages or plates, and place of publication, or place where a copy can be found, shall be given.

(b) When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

9. Section 1.109 is revised to read as follows:

§1.109 Reasons for allowance.

If the examiner believes that the record of the prosecution as a whole does not make clear his or her reasons for allowing a claim or claims, the examiner may set forth such reasoning. The reasons shall be incorporated into an Office action rejecting other claims of the application or patent under reexamination or be the subject of a separate communication to the applicant or patent owner. The applicant or patent owner may file a statement commenting on the reasons for allowance within such time as may be specified by the examiner. Failure to file such a statement shall not give rise to any implication that the applicant or patent owner agrees with or acquiesces in the reasoning of the examiner.

10. Section 1.111 is revised to read as follows:

§1.111 Reply by applicant or patent owner.

(a) After the Office action, if adverse in any respect, the applicant or patent owner, if he or she persists in his or her application for a patent or reexamination proceeding, must reply thereto and may request reconsideration or further examination, with or without amendment.

(b) In order to be entitled to reconsideration or further examination, the applicant or patent owner must make request therefor in writing. The reply by the applicant or patent owner must distinctly and specifically point out the supposed errors in the examiner's action and must respond to every ground of objection and rejection in the prior Office action. If the reply is with respect to an application, a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated. The applicant's or patent owner's reply must appear throughout to be a bona fide attempt to advance the case to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

(c) In amending in response to a rejection of claims in an application or patent undergoing reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. (See §§1.135 and 1.136 for time for reply.)

11. Section 1.112 is revised to read as follows:

§1.112 Reconsideration.

After response by applicant or patent owner (§1.111), the application or patent under reexamination will be reconsidered and again examined. The applicant or patent owner will be notified if claims are rejected, or objections or requirements made, in the same manner as after the first examination. Applicant or patent owner may respond to such Office action in the same manner provid-

ed in §1.111, with or without amendment. Any amendments after the second Office action must ordinarily be restricted to the rejection or to the objections or requirements made. The application or patent under reexamination will be again considered, and so on repeatedly, unless the examiner has indicated that the action is final.

12. Section 1.113 is amended by revising paragraph (a) to read as follows:

§1.113 Final rejection or action.

(a) On the second or any subsequent examination or consideration the rejection or other action may be made final, whereupon applicant's or patent owner's response is limited to appeal in the case of rejection of any claim (§1.191), or to amendment as specified in §1.116. Petition may be taken to the Commissioner in the case of objections or requirements not involved in the rejection of any claim (§1.181). Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the response to a final rejection or action must comply with any requirements or objection as to form.

* * * * *

13. Section 1.115 is revised to read as follows:

§1.115 Amendment.

The applicant may amend before or after the first examination and action and also after the second or subsequent examination or reconsideration as specified in §1.112 or when and as specifically required by the examiner. The patent owner may amend in accordance with §§1.510(e) and 1.530(b) prior to reexamination, and during reexamination proceedings in accordance with §§1.112 and 1.116.

14. Section 1.116 is amended by revising paragraphs (a) and (b) to read as follows:

§1.116 Amendments after final action.

(a) After final rejection or action (§1.113) amendments may be made cancelling claims or complying with any requirement of form which has been made. Amendments presenting rejected claims in better form for consideration on appeal may be admitted. The admission of, or refusal to admit, any amendment after final rejection, and any proceedings relative thereto, shall not operate to relieve the application or patent under reexamination from its condition as subject to appeal or to save the application from abandonment under §1.135.

(b) If amendments touching the merits of the application or patent under reexamination are presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon a showing of good and sufficient reasons why they are necessary and were not earlier presented.

* * * * *

15. Section 1.121 is amended by adding a new paragraph (f) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(f) Proposed amendments presented is patents involved in reexamination proceedings must be presented in the form of a full copy of the text of (1) each claim which is amended and (2) each paragraph of the description which is amended. Matter deleted from the patent shall be placed between brackets and matter added shall be underlined. Copies of the printed claims from the patent may be used with any additions being indicated by carets and deleted material being placed between brackets. Claims must not be renumbered and the numbering of the claims added for reexamination must follow the number of the highest numbered patent claim. No amendment may enlarge the scope of the claims of the patent. No new matter may be introduced into the patent.

16. Section 1.191 is revised to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee required by law, appeal from the decision of the primary examiner to the Board of Appeals within the time allowed for response.

(b) The appeal in an application must identify the rejected claim or claims appealed, and must be signed by the applicant or duly authorized attorney or agent. An appeal in a reexamination proceeding must identify the rejected claim or claims appealed, and must be signed by the patent owner or duly authorized attorney or agent.

(c) Except as otherwise provided by §1.206, an appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

17. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. Appellant must also indicate at the time of filing the brief if an oral hearing is desired. Upon a showing of sufficient cause, the Commissioner may grant extensions of time for filing the brief. The determination of such requests may be delegated by the Commissioner to appropriate Patent and Trademark Office officials. All requests for extensions must be filed prior to the expiration of the period sought to be extended. The filing of a request for extension of time does not stay any period unless and until granted.

* * * * *

18. Section 1.196 is amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.196 Decision by the Board of Appeals.

* * * * *

(b) Should the Board of Appeals have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a rejection of the claims. The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the primary examiner. The statement shall be binding upon the primary examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the primary examiner, avoids the additional ground for rejection stated in the decision. The appellant may waive such reconsideration before the primary examiner and have the case reconsidered by the Board of Appeals upon the same record before them. Where request for such reconsideration is made the Board of Appeals shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused. The appellant may waive reconsideration by the Board of Appeals and treat the decision, including the added grounds for rejection given by the Board of Appeals, as a final decision in the case.

(c) Should the decision of the Board of Appeals include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement, which shall be binding on the primary examiner in the absence of new references or grounds of rejection.

(d) Although the Board Appeals normally will confine its decision to a review of rejections made by the primary examiner, should it have knowledge of any grounds for rejecting any allowed claim that it believes should be considered, it may include in its decision a statement to that effect and remand the case to the primary examiner for consideration thereof. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the primary examiner an appropriate amendment, or a showing of facts or reasons, or both, in order to avoid the grounds set forth in the statement of the Board of Appeals. If the primary examiner rejects the previously allowed claim or claims on the basis of such statement, the appellant may appeal to the Board of Appeals from the rejection. Whenever a decision of the Board of Appeals includes a remand, that decision shall not be considered as a final decision in the case, but the Board of Appeals shall, upon conclusion of the proceedings before the primary examiner on remand, either adopt its decision as final or render a new decision on all of the claims on appeal, as it may deem appropriate.

19. Section 1.197 is amended by revising paragraphs (a) and (c) to read as follows:

§1.197 Action following decision.

(a) After decision by the Board of Appeals, the case shall be returned to the primary examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the primary examiner, as the condition of the case may require, to carry into effect the decision.

* * * * *

(c) Proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the court or a civil action (§1.304) except (1) where claims stand allowed in an application or (2) where the nature of the decision requires further action by the examiner. In such cases, the date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the court or review by civil action (§1.304) expires. If an appeal to the court or a civil action has been filed, proceedings are similarly considered terminated when the appeal or civil action is terminated.

20. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the courts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.21(x). Otherwise, a motion to dissolve an interference in which a patentee is a party will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * * * *

21. Section 1.248 is revised to read as follows:

§1.248 Service of papers; manner of service; proof of service.

(a) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in any of the following ways:

(1) By delivering a copy of the paper to the person served;

(2) By leaving a copy at the usual place of business of the person served with someone in his employment;

(3) When the person served has no usual place of business, by leaving a copy at the person's residence, with some person of suitable age and discretion who resides there;

(4) Transmission by first class mail. When service is by mail the date of mailing will be regarded as the date of service.

(5) Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the *Official Gazette.*

(6) Papers filed in the Patent and Trademark Office which are required to be served shall contain proof of service. Proof of service may appear on or be affixed to papers filed. Proof of service shall include the date and manner of service. In the case of personal service, proof of service shall also include the name of any person served, certified by the person who made service. Proof of service may be made by (1) an acknowledgement of service by or on behalf of the person served or (2) a statement signed by the attorney or agent containing the information required by this section.

22. Section 1.291 is amended by revising the title, removing and reserving paragraph (b) and revising paragraph (c) to read as follows:

§1.291 Protests by public.

* * * * *

(b) (Reserved)

(c) Protests by the public and any accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant in accordance with §1.248 or (2) be filed with the Office in duplicate in the event service is not possible.

23. Section 1.301 is revised to read as follows:

§1.301 Appeal to U.S. Court of Customs and Patent Appeals.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§1.302 and 1.304); (b) in the court, file as petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

24. Section 1.303 is revised to read as follows:

§1.303 Civil Action under 35 U.S.C. 145,146,306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the deci-

sion of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of Customs and Patent Appeals (§1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in §1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If a defeated party to an interference proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the interference shall, within twenty days after the appellant shall have filed notice of the appeal to the court (§1.302), file notice with the Commissioner that he or she elects to have all further proceedings conducted as provided in 35 U.S. C. 146, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in §1.248.

25. A new "Subpart D—Reexamination of Patents" is added to read as follows:

Subpart D—Reexamination of Patents

Citation of Prior Art

Sec.

1.501 Citation of prior art in patent files.

Request for Reexamination

1.510 Request for reexamination.
1.515 Determination of the request for reexamination.
1.520 Reexamination at the initiative of the Commissioner.

Reexamination

1.525 Order to reexamine.
1.530 Statement and amendment by patent owner.
1.535 Reply by requester.
1.540 Consideration of responses.
1.550 Conduct of reexamination proceedings.
1.552 Scope of reexamination in reexamination proceedings.
1.555 Duty of disclosure in reexamination proceedings.
1.560 Interviews in reexamination proceedings.
1.565 Concurrent Office proceedings.

Certificate

1.570 Issuance of reexamination certificate after reexamination proceedings.

Subpart D—Reexamination of Patents

Citation of Prior Art

§1.501 Citation of prior art in patent files.

(a) At any time during the period of enforceability of a patent, any person may cite to the Patent and Trademark Office in writing prior art consisting of patents or printed publications which that person states to be pertinent and applicable to the patent and believes to have a bearing on the patentability of any claim of a particular patent. If the citation is made by the patent owner, the explanation of pertinency and applicability may include an explanation of how the claims differ from the prior art. Citations by the patent owner under §1.555 and by a reexamination requester under either §1.510 or §1.535 will be entered in the patent file during a reexamination proceeding. The entry in the patent file of citations submitted after the date of an order to reexamine pursuant to §1.525 by persons other than the patent owner, or a reexamination requester under either §1.510 or §1.535, will be delayed until the reexamination proceedings have been terminated.

(b) If the person making the citation wishes his or her identity to be excluded from the patent file and kept confidential, the citation papers must be submitted without any identification of the person making the submission.

(c) Citation of patents or printed publications by the public in patent files should either (1) reflect that a copy of the same has been mailed to the patent owner at the address as provided for in §1.33(c); or in the event service is not possible (2) be filed with the Office in duplicate.

Request for Reexamination

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under §1.501. The request must be accompanied by the fee for requesting reexamination set in §1.21(x).

(b) Any request for reexamination must include the following parts:

(1) a statement pointing out each substantial new question of patentability based on prior patents and printed publications.

(2) An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested. If appropriate the party requesting reexamination may also point out how claims distinguish over cited prior art.

(3) A copy of every patent or printed publication relied upon or referred to in paragraph (b) (1) and (2) of this section accompanied by an English language translation of all the necessary and pertinent parts of any non-English language patent or printed publication.

(4) The entire specification (including claims) and drawings of the patent for which reexamination is requested must be furnished in the form of cut-up copies of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper. A copy of any dislcaimer, certificate of correction, or reexamination certificate issued in the patent must also be included.

(5) A certification that a copy of the request filed by a person other than the patent owner has been served in its entirety on the patent owner at the address as provided for in §1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy must be supplied to the Office.

(c) If the request does not include the fee for requesting reexamination or all of the parts required by paragraph (b) of this section, the person identified as requesting reexamination will be so notified and given an opportunity to complete the request within a specified time. If the fee for requesting reexamination has been paid but the defect in the request is not corrected within the specified time, the determination whether or not to institute reexamination will be made on the request as it then exists. If the fee for requesting reexamination has not been paid, no determination will be made and the request will be placed in the patent file as a citation if it complies with the requirements of §1.501(a).

(d) The filing date of the request is: (1) the date on which the request including the entire fee for requesting reexamination is received in the Patent and Trademark Office; or (2) the date on which the last portion of the fee for requesting reexamination is received.

(e) A request filed by the patent owner, may include a proposed amendment in accordance with §1.121(f).

(f) If a request is filed by an attorney or agent identifying another party on whose behalf the request is being filed, the attorney or agent must have a power of attorney from that party or be acting in a representative capacity pursuant to §1.34(a).

§1.515 Determination of the request for reexamination.

(a) Within three months following the filing date of a request for reexamination, an examiner will consider the request and determine whether or not a substantial new question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein, with or without consideration of other patents or printed publications. The examiner's determination will be based on the claims in effect at the time of the determination and will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in §1.33(c) and to the person requesting reexamination.

(b) Where no substantial new question of patentability has been found, a refund of a portion of the fee for requesting reexamination will be made to the requester in accordance with §1.26(c).

(c) The requester may seek review by a petition to the Commissioner under §1.181 within one month of the mailing date of the examiner's determination refusing reexamination. Any such petition must comply with §1.181(b). If no petition is timely filed or if the decision on petition affirms that no substantial new question of patentability has been raised, the determination shall be final and nonappealable.

§1.520 Reexamination at the initiative of the Commissioner.

The Commissioner, at any time during the period of enforceability of a patent, may determine whether or not a substantial new question of patentability is raised by patents or printed publications which have been discovered by the Commissioner or which have been brought to the Commissioner's attention even though no request for reexamination has been filed in accordance with §1.510. The Commissioner may initiate reexamination without a request for reexamination pursuant to §1.510. Normally requests from outside the Patent and Trademark Office that the Commissioner undertake reexamination on his own initiative will not be considered. Any determination to initiate reexamination under this section will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in §1.33(c).

Reexamination

§1.525 Order to reexamine.

(a) If a substantial new question of patentability is found pursuant to §§1.515 or 1.520, the determination will include an order for reexamination of the patent for resolution of the question. If the order for reexamination resulted from a petition pursuant to §1.515(c), the reexamination will ordinarily be conducted by an examiner other than the examiner responsible for the initial determination under §1.515(a).

(b) If the order for reexamination of the patent mailed to the patent owner at the address as provided for in §1.33(c) is returned to the Office undelivered, the notice published in the *Official Gazette* under §1.11(c) will be considered to be constructive notice and reexamination will proceed.

§1.530 Statement and amendment by patent owner.

(a) Except as provided in §1.510(e), no statement or other response by the patent owner shall be filed prior to the determinations made in accordance with §§1.515 or 1.520. If a premature statement or other response is filed by the patent owner it will not be acknowledged or considered in making the determination.

(b) The order for reexamination will set a period of not less than two months from the date of the order within which the patent owner may file a statement on the new question of patentability including any proposed amendments the patent owner wishes to make.

(c) Any statement filed by the patent owner shall clearly point out why the subject matter as claimed is not anticipated or rendered obvious by the prior art patents or printed publications, either alone or in any reasonable combinations. Any statement filed must be served upon the reexamination requester in accordance with §1.248.

(d) Any proposed amendments to the description and claims must be made in accordance with §1.21(f). No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amended or new claims may be proposed for entry in an expired patent. Moreover, no amended or new claims will be incorporated into the patent by certificate issued after the expiration of the patent.

(e) Although the Office actions will treat proposed amendments as though they have been entered, the proposed amendments will not be effective until the reexamination certificate is issued.

§1.535 Reply by requester.

A reply to the patent owner's statement under §1.530 may be filed by the reexamination requester within two months from the date of service of the patent owner's statement. Any reply by the requester must be served upon the patent owner in accordance with §1.248. If the patent owner does not file a statement under §1.530, no reply or other submission from the reexamination requester will be considered.

§1.540 Consideration of responses.

The failure to timely file or serve the documents set forth in §1.530 or in §1.535 may result in their being refused consideration. No submissions other than the statement pursuant to §1.530 and the reply by the requester pursuant to §1.535 will be considered prior to examination.

§1.550 Conduct of reexamination proceedings.

(a) All reexamination proceedings, including any appeals to the Board of Appeals, will be conducted with special dispatch within the Office. After issuance of the reexamination order and expiration of the time for submitting any responses thereto, the examination will be conducted in accordance with §§1.104–1.119 and will result in the issuance of a reexamination certificate under §1.570.

(b) The patent owner will be given at least 30 days to respond to any Office action. Such response may include further statements in response to any rejections and/or proposed amendments or new claims to place the patent in a condition where all the claims, if amended as proposed, would be patentable.

(c) The time for reply set in paragraph (b) of this section will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

(d) If the patent owner fails to file a timely and appropriate response to any Office action, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under §1.570 in accordance with the last action of the Office.

(e) The reexamination requester will be sent copies of Office actions issued during the reexamination proceeding. Any document filed by the patent owner must be served on the requester in the manner provided in §1.248. The document must reflect service or the document may be refused consideration by the Office. The active participation of the reexamination requester ends with the reply pursuant to §1.535, and no further submissions on behalf of the reexamination requester will be acknowledged or considered. Further, no submissions on behalf of any third parties will be acknowledged or considered unless such submissions are (1) in accordance with §1.510 or (2) entered in the patent file prior to the date of the order to reexamine pursuant to §1.525. Submissions by third parties, filed after the date of the order to reexamine the pursuant to §1.525, must meet the requirements of and will be treated in accordance with §1.501(a).

§1.552 Scope of reexamination in reexamination proceedings.

(a) Patent claims will be reexamined on the basis of patents or printed publications.

(b) Amended or new claims presented during a reexamination proceeding must not enlarge the scope of the claims of the patent and will be examined on the basis of patents or printed publications and also for compliance with the requirements of 35 U.S.C. 112 and the new matter prohibition of 35 U.S.C. 132.

(c) Questions other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding. If such questions are discovered during a reexamination proceeding, the existence of such questions will be noted by the examiner in an Office action, in which case the patent owner may desire to consider the advisability of filing a reissue application to have such questions considered and resolved.

§1.555 Duty of disclosure in reexamination proceedings.

The owner of a patent involved in a reexamination proceeding who is aware, or becomes aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publicatons to the attention of the Office.

§1.560 Interviews in reexamination proceedings.

(a) Interviews in reexamination proceedings pending before the Office between examiners and the owners of such patents or their attorneys or agents of record must be had in the Office at such times, within Office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews for the discussion of the patentability of claims in patents involved in reexamination proceedings will not be had prior to the first official action thereon. Interviews should be arranged for in advance. Requests that reexamination requesters participate in interviews with examiners will not be granted.

(b) In every instance of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the patent owner. An interview does not remove the necessity for response to Office actions as specified in §1.111.

§1.565 Concurrent office proceedings.

(a) In any reexamination proceeding before the Office, the patent owner shall call the attention of the Office to any prior or concurrent proceedings in which the patent is or was involved such as interferences, reissue, reexaminations, or litigation and the results of such proceedings.

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or a reissue application is filed for the patent, or litigation is instituted, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding. If reexamination is stayed for the conduct of a reissue proceeding, the reissue proceeding shall take into account prior art provided by the requester for reexamination and the reexamination requester will be granted at least the same degree of participation in the reissue proceeding which the requester would have had in the reexamination proceeding. Any reexamination proceeding stayed for the conduct of a reissue proceeding shall be terminated by the grant of the reissued patent.

(c) If reexamination is ordered while a prior reexamination proceeding is pending, the reexamination proceedings will be consolidated and result in the issuance of a single certificate under §1.570.

Certificate

§1.570 Issuance of reexamination certificate after reexamination proceedings.

(a) Upon the conclusion of reexamination proceedings, the Commissioner will issue a certificate in accordance with 35 U.S.C. 307 setting forth the results of the reexamination proceeding and the content of the patent following the reexamination proceeding.

(b) A certificate will be issued in each patent in which a reexamination proceeding has been ordered under §1.525. Any statutory disclaimer filed by the patent owner will be made part of the certificate.

(c) The certificate will be mailed on the day of its date to the patent owner at the address as provided for in §1.33(c). A copy of the certificate will also be mailed to the requester of the reexamination proceeding.

(d) If a certificate has been issued which cancels all of the claims of the patent, no further Office proceedings will be conducted with regard to that patent or any reissue applications or reexamination requests relating thereto.

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in §1.565(b), the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

(f) A notice of the issuance of each certificate under this section will be published in the *Official Gazette* on its date of issuance.

RENE D. TEGTMEYER,
May 12, 1981. *Acting Commissioner of Patents and Trademarks.*

ROBERT B. ELLERT,
May 15, 1981. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

[FR Doc. 81-16031 Filed 5-26-81; 8:45 am]
BILLING CODE 3510-16-M

PUBLIC LAW 96-517—DEC. 12, 1980

Public Law 96-517
96th Congress

An Act

To amend the patent and trademark laws.

Dec. 12, 1980
[H.R. 6933]

Patent and trademark laws, amendment.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That title 35 of the United States Code, entitled "Patents", is amended by adding after chapter 29 the following new chapter 30:

"CHAPTER 30—PRIOR ART CITATIONS TO OFFICE AND REEXAMINATION OF PATENTS

"Sec.
"301. Citation of prior art.
"302. Request for reexamination.
"303. Determination of issue by Commissioner.
"304. Reexamination order by Commissioner.
"305. Conduct of reexamination proceedings.
"306. Appeal.
"307. Certificate of patentability, unpatentability, and claim cancellation.

"§301. Citation of prior art

35 USC 301.

"Any person at any time may cite to the Office in writing prior art consisting of patents or printed publications which that person believes to have a bearing on the patentability of any claim of a particular patent. If the person explains in writing the pertinency and manner of applying such prior art to at least one claim of the patent, the citation of such prior art and the explanation thereof will become a part of the official file of the patent. At the written request of the person citing the prior art, his or her identity will be excluded from the patent file and kept confidential.

"§302. Request for reexamination

35 USC 302.

"Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

Fee.

Post, p. 3017.

"§303. Determination of issue by Commissioner

35 USC 303.

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

"(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent, and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.

Record.

"(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee required under section 302 of this title.

Refund.

"§304. Reexamination order by Commissioner

35 U.S.C. 304.

"If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from the date a copy of the determination is given or mailed to him, within which he may file a statement on such question, including any amendment to his patent and new

Filing period.

claim or claims he may wish to propose, for consideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provisions of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

"§305. Conduct of reexamination proceedings 35 USC 305.

"After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provisions of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office. 35 USC 132,13

"§306. Appeal 35 USC 306.

"The patent owner involved in a reexamination proceeding under this chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent. 35 USC 134. 35 USC 141-14

"§307. Certificate of patentability, unpatentability, and claim cancellation 35 USC 307.

"(a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable, confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.

"(b) Any proposed amended or new claim determined to be patentable and incorporated into a patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title or reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section." 35 USC 252.

SEC. 2. Section 41 of title 35, United States Code, is amended to read as follows:

"§41. Patent fees 35 USC 41.

"(a) the Commissioner of Patents will establish fees for the processing of an application for a patent, from filing through disposition by issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. No fee will be established for maintaining a design patent in force.

"(b) By the first day of the first fiscal year beginning on or after one calendar year after enactment of this Act, fees for the actual processing of an application for a patent, other than for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 25 per centum of the estimated average cost to the

Office of such processing. By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for the processing of an application for a design patent, from filing through disposition by issuance or abandonment, will recover in aggregate 50 per centum of the estimated average cost to the Office of such processing.

"(c) By the fifteenth fiscal year following the date of enactment of this Act, fees for maintaining patents in force will recover 25 per centum of the estimated cost to the Office, for the year in which such maintenance fees are received, of the actual processing all applications for patents, other than for design patents, from filing through disposition by issuance or abandonment. Fees for maintaining a patent in force will be due three years and six months, seven years and six months and eleven years and six months after the grant of the patent. Unless payment of the applicable maintenance fee is received in the Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period. The Commissioner may require the payment of a surcharge as a condition of accepting within such six-month grace period the late payment of an applicable maintenance fee.

"(d) By the first day of the first fiscal year beginning on or after one calendar year after enactment, fees for all other services or materials related to patents will recover the estimated average cost to the Office of performing the service or furnishing the material. The yearly fee for providing a library specified in section 13 of this title with uncertified printed copies of the specifications and drawings for all patents issued in that year will be $50. 35 USC 13.

"(e) The Commissioner may waive the payment of any fee for any service or material related to patents in connection with an occasional or incidental request made by a department or agency of the Government, or any officer thereof. The Commissioner may provide any applicant issued a notice under section 132 of this title with a copy of the specifications and drawings for all patents referred to in that notice without charge. Waiver. 35 USC 132.

"(f) Fees will be adjusted by the Commissioner to achieve the levels of recovery specified in this section; however, no patent application processing fee or fee for maintaining a patent in force will be adjusted more than once every three years.

"(g) No fee established by the Commissioner under this section will take effect prior to sixty days following notice in the Federal Register." Notice.

SEC. 3. Section 42 of title 35, United States Code, is amended to read as follows:

"§42. Patent and Trademark Office funding 35 USC 42.

"(a) All fees for services performed by or materials furnished by the Patent and Trademark Office will be payable to the Commissioner.

"(b) All fees paid to the Commissioner and all appropriations for defraying the costs of the activities of the Patent and Trademark Office will be credited to the Patent and Trademark Office Appropriation Account in the Treasury of the United States, the provisions of section 725e of title 31, United States Code, notwithstanding.

"(c) Revenues from fees will be available to the Commissioner of Patents to carry out, to the extent provided for in appropriation Acts, the activities of the Patent and Trademark Office.

"(d) The Commissioner may refund any fee paid by mistake or any amount paid in excess of that required." Refund.

SEC. 4. Section 154 of title 35, United States Code, is amended by deleting the word "issue".

* * * * *

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, October 6, 1981.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, *** but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States, your application for registration must be accompanied by your supervisor's verified statement that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $35 fee not later than July 31, 1980.

Application blanks may be obtained from the clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va. or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

May 19, 1981.

PATENT NOTICES

Certificates of Correction for the Week of June 23, 1981

4,006,704	4,231,693	4,246,638	4,253,505
4,062,096	4,231,874	4,246,652	4,254,045
4,095,036	4,231,932	4,247,351	4,254,331
4,097,675	4,232,528	4,247,611	4,254,510
4,117,024	4,232,738	4,247,700	4,254,857
4,143,664	4,234,422	4,247,921	4,255,719
4,153,488	4,234,579	4,248,129	4,256,008
4,157,495	4,235,916	4,248,389	4,256,461
4,158,632	4,235,979	4,248,608	4,256,657
4,171,447	4,236,996	4,248,616	4,256,877
4,174,442	4,237,171	4,248,629	4,257,006
4,191,135	4,238,651	4,248,654	4,257,112
4,192,762	4,241,065	4,248,795	4,257,500
4,196,229	4,241,636	4,248,921	4,258,693
4,197,942	4,241,674	4,249,509	4,258,803
4,199,604	4,242,189	4,249,533	4,258,875
4,199,813	4,242,332	4,249,744	4,259,362
4,205,333	4,242,251	4,249,803	4,259,385
4,208,870	4,242,597	4,250,205	4,259,492
4,211,719	4,242,832	4,250,234	4,259,958
4,216,218	4,243,010	4,250,317	4,260,652
4,216,952	4,243,156	4,251,183	4,260,735
4,218,414	4,243,608	4,251,274	4,260,804
4,218,513	4,243,708	4,251,283	4,260,905
4,221,809	4,243,732	4,251,398	4,261,212
4,224,913	4,244,272	4,251,475	4,261,243
4,225,923	4,244,439	4,251,586	4,261,676
4,226,673	4,244,977	4,252,305	4,261,722
4,227,063	4,245,169	4,252,914	4,262,157
4,227,176	4,245,382	4,252,941	4,262,158
4,228,246	4,245,562	4,253,035	4,262,305
4,230,618	4,246,045	4,253,153	4,263,170
4,231,509	4,246,078		

Disclaimers

3,401,521.—*John R. Plate,* Milwaukee, Wis. HYDRAULIC CONTROL VALVE. Patent dated Sept. 17, 1968. Disclaimer filed Apr. 1, 1981, by the assignee, *Allis-Chalmers Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,460,739.—*Norman John Asman,* Appleton, Wis. END CLOSURES FOR LIQUID CONTAINER. Patent dated Aug. 12, 1969. Disclaimer filed Feb. 23, 1981, by the assignee, *American Can Co.*

Hereby enters this disclaimer to all claims, 1 through 10 of said patent.

3,751,693.—*Andrew Gabor,* Danville, Calif. MOVING COIL MOTOR WITH NO STRAY FLUX. Patent dated Aug. 7, 1973. Disclaimer filed Feb. 9, 1981, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to all claims of said patent.

3,527,316.—*Elborn William Jones, Jr.,* West Allis and *Robert E. Schott,* New Berlin, Wis. STEERING MECHANISM. Patent dated Sept. 8, 1970. Disclaimer filed Mar. 26, 1981, by the assignee, *Allis-Chalmers Corp.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

4,119,853.—*Peter Stephen Shelley,* Brookfield; *William Darrell Love* and *Barry Newell Stone,* Waukesha, Wis. MULTICELL X-RAY DETECTOR. Patent dated Oct. 10, 1978. Disclaimer filed Apr. 24, 1981, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1, 2, 6, 9, 15 and 26 of said patent.

Dedication

3,407,684.—*Andrew J. Van Noord,* Grand Rapids, Mich. REMOTE CONTROL MIRROR. Patent dated Oct. 29, 1968. Dedication filed Dec. 29, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

National Technical Information Service

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U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6–193,862. Stickless Burley Tobacco Curing Frames. Filed Oct. 3, 1980.

Patent application 6–202,397. Apparatus for Making No-Twist Yarn. Filed Oct. 30, 1980.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6–058,339. Apparatus for Measuring the Local Void Fraction in a Flowing Liquid Containing a Gas. Filed July 17, 1979.

Patent application 6-061,114. Servo Control Booster System for Minimizing Following Error. Filed July 26, 1979.

Patent application 6-064,594. Self-Modulating Pressure Gauge. Filed Aug. 7, 1979.

Patent application 6-065,033. Combined Hydraulic and Regenerative Braking System. Filed Aug. 9, 1979.

Patent application 6-065,771. Coal-Feeding Mechanism for a Fluidized Bed Combustion Chamber. Filed Aug. 13, 1979.

Patent application 6-066,107. Laser Pulse Detector. Filed Aug. 13, 1979.

Patent application 6-067,858. Acceleration Switch. Filed Aug. 20, 1979.

Patent application 6-070,545. Acceleration Switch. Filed Aug. 29, 1979.

Patent application 6-070,546. Device for Absorbing Mechanical Shock. Filed Aug. 29, 1979.

Patent application 6-070,547. Wet Powder Seal for Gas Containment. Filed Aug. 29, 1979.

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Patent 4,181,882. Corrosion Monitoring Apparatus. Filed Jan. 19, 1978. Patented Jan. 1, 1980. Not available NTIS.

Patent 4,184,514. Valve System Incorporating Single Failure Protection Logic. Filed Jan. 11, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,184,536. Heat Rejection System. Filed Feb. 22, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,184,662. Valve for Controlling Solids Flow. Filed July 25, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,187,738. Rim for Rotary Inertial Energy Storage Device and Method. Filed May 10, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,187,764. Fast-Acting Valve Actuator. Filed July 12, 1972. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,188,038. Seal Arrangement for Intersecting Conduits. Filed Apr. 10, 1968. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,686. Combination Free Electron and Gaseous Laser. Filed Sept. 27, 1977. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,693. Superconducting Magnet. Filed Dec. 28, 1977. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,189,944. Hydrodynamic Ultrasonic Probe. Filed Nov. 3, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,160. Accident Resistant Transport Container. Filed Mar. 6, 1979. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,191,928. Laser System Using Regenerative Amplifier. Filed Jan. 11, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,193,422. Annular Flow Diverter Valve. Filed Nov. 24, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,170. Shifting of Infrared Radiation Using Rotational Raman Resonances in Diatomic Molecular Gases. Filed Nov. 13, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,195,813. Valve. Filed May 15, 1972. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,353. Microradiographic Microsphere Manipulator. Filed Jan. 24, 1979. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,423. Acoustic Emission Intrusion Detector. Filed Aug. 9, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,522. Alignment Fixture. Filed Apr. 30, 1979. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,196,613. Device for measuring the Fluid Density of a Two-Phase Mixture. Filed Nov. 30, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,198,740. Method for Forming or Bonding a Liner. Filed July 24, 1978. Patented Apr. 22, 1980. Not available NTIS.

Patent 4,202,931. Superconducting Articles of Manufacture and Method of Producing Same. Filed Sept. 23, 1974. Patented May 13, 1980. Not available NTIS.

Patent 4,203,303. Torque-Balanced Vibrationless Rotary Coupling. Filed July 28, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,882. Thermocouple Split Follower. Filed Dec. 3, 1965. Patented May 27, 1980. Not available NTIS.

Patent 4,217,192. Decontamination of Metals Using Chemical Etching. Filed June 11, 1979. Patented Aug. 12, 1980. Not available NTIS.

Patent 4,218,908. Device and Method for Shortening Reactor Process Tubes. Filed Jan. 24, 1979. Patented Aug. 26, 1980. Not available NTIS.

Patent 4,219,237. Method for Maximizing Shale Oil Recovery from an Underground Formation. Filed Sept. 30, 1977. Patented Aug. 26, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent application 6-217,143. Everting Tube Device with Relative Advance Control. Filed Dec. 16, 1980.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents
18th and C Streets, N.W.
Washington, D.C. 20240

Patent application 6-177,975. A Method for Clarifying Slimes. Filed Aug. 14, 1980.

Patent application 6-177,976. Extraction of Metal Ions from Aqueous Solution. Filed Aug. 14, 1980.

Patent application 6-180,188. Ozone Treatment of Wet-Process Phosphoric Acid. Filed Aug. 22, 1980.

Patent application 6-186,090. Recovery of Bismuth from Chloride Process Solutions. Filed Sept. 11, 1980.

Patent application 6-200,110. In situ Tritium Borehole Probe for Measurement of Tritium. Filed Oct. 24, 1980.

Patent 4,223,014. Spray Immunization of Fish. Filed May 8, 1978. Patented Sept. 16, 1980. Not available NTIS.

Patent 4,231,866. Recovery of Organic and Aqueous Phases from Solvent Extraction Emulsions. Filed Aug. 24, 1978. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,231,994. Separation of Zirconium from Hafnium by Solvent Extraction. Filed Aug. 27, 1979. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,239,547. Recycling Spent Asphaltic Concrete. Filed Jan. 12, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,242,192. Electrolytic Stripping Cell. Filed Sept. 6, 1979. Patented Dec. 30, 1980. Not avaiable NTIS.

Patent 4,242,312. Removal of Sodium Sulfate from a Sulfate-Containing Sodium Chloride Solution in a Process for Separating Zirconium and Hafnium. Filed Aug. 7, 1979. Patented Dec. 30, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent application 6-097,480. Case Mounted Mooring System. Filed Nov. 26, 1979.

Patent application 6-160,880. Self-Aligned Recessed Gate with Low Source Resistance. Filed June 16, 1980.

Patent application 6-167,866. Flexible Loop Slip Ring Brush. Filed July 14, 1980.

Patent application 6-174,292. Electronically Simulated Rotating Prism for Ultrasonic Beam Scanning. Filed Aug. 1, 1980.

Patent application 6-206,403. Method for the Separation of Uranium Isotopes. Filed Nov. 3, 1980.

Patent application 6-210,188. Multiple Thin Film Absorption of Reflected Substrate Modes in Waveguide System. Filed Nov. 25, 1980.

Patent application 6-214,926. Refractory Passivated Ion-Implanted GaAs Ohmic Contacts. Filed Dec. 10, 1980.

Patent application 6-216,715. Improved Pseudo-Atmospheric Noise Generator with Control of Temporal Characteristics. Filed Dec. 15, 1980.

Patent application 6-216,878. Adaptive Digital Communication System. Filed Dec. 15, 1980.

Patent application 6-217,306. Simplified Fabrication Method for High-Performance FET. Filed Dec. 17, 1980.

Patent application 6-217,977. High Performance Bipolar Microwave Transistor. Filed Dec. 19, 1980.

Patent application 6-219,662. Radar Tracking System. Filed Dec. 23, 1980.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 16, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	02-05-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	1-07-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-03-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	01-28-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-13-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-17-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television: Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	03-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	3-26-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	01-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-06-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	06-22-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,131,397 to 3,134,980, inclusive

Plant Patents ..... Numbers 2,399 to 2,406, inclusive

REISSUES

JUNE 23, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

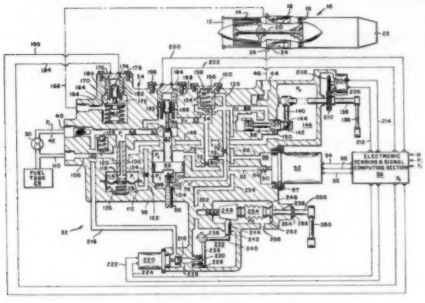
Re. 30,653
FUEL CONTROL FOR GAS TURBINE ENGINE

Robert W. Schuster, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Original No. 4,033,112, dated Jul. 5, 1977, Ser. No. 616,731, Sep. 25, 1975. Application for reissue Nov. 26, 1979, Ser. No. 97,574

Int. Cl.[3] **F02C** *9/08*

U.S. Cl. 60—39.28 R **12 Claims**



1. Fuel control apparatus for a combustion engine comprising:

a fuel supply conduit for conducting a flow of pressurized fuel from a pressurized source to said engine;

first positionable valve means operatively connected to said supply conduit for establishing a controlled flow of fuel therethrough to said engine;

first fuel pressure differential responsive means operatively connected to said first valve means for actuating the same;

second valve means operatively connected to said supply conduit in series flow relationship with said first valve means and downstream therefrom for creating a predetermined back pressure against fuel flow through said first valve means [and] *by* restricting fuel flow *in the supply conduit* to establish a predetermined fuel pressure differential [in said supply conduit]. *said second valve having a wall that moves in an opened direction in response to said predetermined fuel pressure differential to allow fuel to flow to said engine;*

resilient means operatively connected to said second valve means for urging the same toward a closed position in opposition to the fuel pressure upstream therefrom

[second fuel pressure differential responsive means vented to said supply conduit upstream and downstream from said second valve means and responsive to the fuel pressure differential therebetween for actuating said second valve means in an opening direction in opposition to said resilient means;] *to establish a minimum fuel pressure differential;*

first passage means connected to said supply conduit in parallel flow relationship with said second valve means;

second passage means connecting said first fuel pressure differential responsive means to said supply conduit downstream from said second valve means;

a restriction in said first passage means;

a *first* variable area valve in said first passage means for controlling the fuel pressure intermediate said restriction and said variable area valve; and

control means responsive to a plurality of variable conditions of engine operation operatively connected to said variable area valve for actuating the same;

said first fuel pressure differential responsive means being [verted] *vented* to said first passage means intermediate said restriction and said variable area valve and responsive to the fuel pressure differential between said intermediate fuel pressure and said fuel pressure in said second passage means.

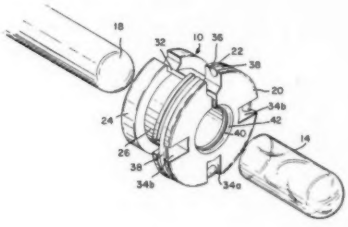
Re. 30,654
STRIPPER RING FOR A CAPSULE-MAKING MACHINE

Larry E. Dittmann, Harrisburg; Wayne L. Millhimes, Hershey, and Glenn A. Steinhauer, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Original No. 4,153,406, dated May 8, 1979, Ser. No. 900,045, Apr. 25, 1978. Application for reissue Oct. 9, 1979, Ser. No. 83,037

Int. Cl.[3] **B29C** *1/00;* **B29D** *23/00*

U.S. Cl. 425—438 **8 Claims**



8. In molding apparatus, for forming a hollow article on a mandrel, and having a slotted stripper ring, with a passageway therethrough, for removing said article from said mandrel, the improvement comprising: a spring metal insert embedded in the ring adjacent the front face thereof with the interior edge defining at least one surface of the passageway and with a pair of ears extending outwardly from said insert with each ear being on one side of and near the slot in the ring.

Re. 30,655
PROCESS FOR PREPARING 3-THIENYL-ACETATE DERIVATIVES

Charles Pigerol; Marie-Madeleine Chandavoine; Michel Chignac, and Paul de Cointet de Fillain, Sisteron, all of France, assignors to Labaz, Paris, France

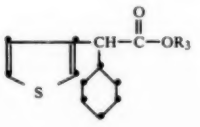
Original No. 4,186,137, dated Jan. 29, 1980, Ser. No. 778,498, Mar. 17, 1977. Continuation-in-part of Ser. No. 651,174, Jan. 21, 1976, abandoned, which is a continuation of Ser. No. 549,938, Feb. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 501,855, Aug. 29, 1974, abandoned. Application for reissue Jun. 27, 1980, Ser. No. 163,500

Claims priority, application France, Aug. 30, 1973, 73 31321

Int. Cl.[3] **C07D** *333/16*

U.S. Cl. 549—79 **1 Claim**

1. In a process for the preparation of a thiophene compound corresponding to the formula:



wherein R_3 represents methyl or ethyl, by the reaction in one step between methyl or ethyl 3-thienyl-acetate and cyclohexyl bromide at a temperature between −15° C. and −10° C. in the presence of sodium hydride in dimethylformamide, the improvement which comprises:

(a) premixing said methyl or ethyl 3-thienyl-acetate with cyclohexyl bromide, and

(b) adding at −15° C. said methyl or ethyl 3-thienyl-acetate/cyclohexyl bromide mixture to said mixture of sodium hydride in dimethylformamide.

PLANT PATENTS

GRANTED JUNE 23, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,746

IMPATIENS PLANT

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed May 16, 1980, Ser. No. 150,301

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Mohegan.

PATENTS

GRANTED JUN. 23, 1981

ERRATA

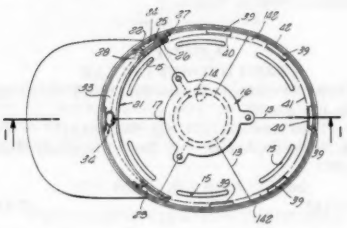
For CLASS	See PATENT NO.
474–023	4,274,295
411–433	4,274,323
411–038	4,274,324
411–083	4,274,460
294–147	4,274,571
369–286	4,275,100
369–286	4,275,101
369–022	4,275,274
369–044	4,275,275
254–227	4,275,295

PATENTS

GRANTED JUNE 23, 1981

GENERAL AND MECHANICAL

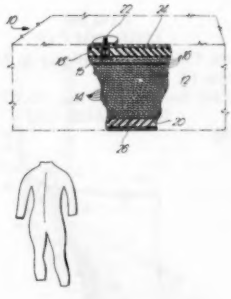
4,274,157
HAT OR CAP WITH ADJUSTABLE BAND
Ogden W. Boden, 1580 Gaywood Dr., Altadena, Calif. 91001
Continuation-in-part of Ser. No. 879,054, Feb. 21, 1978, abandoned. This application Apr. 27, 1978, Ser. No. 900,758
Int. Cl.³ A42B *1/22*
U.S. Cl. 2—181.4 **8 Claims**



1. A ventilated hat or cap comprising:
a crown;
means forming a primary band at the bottom of said crown;
an inner adjusting sweat band extending along an inner side of said primary band at a location to engage and extend across the front of a user's head and having two ends essentially at opposite sides of the user's head;
first and second connections at said two ends respectively of said inner band connecting said ends thereof to said primary band at opposite sides of the user's head;
each of said connections including two sets of Velcro projections carried by said two bands respectively and interengageable to secure the corresponding end of the inner band to the primary band detachably and in any of a series of different positions adjusted longitudinally of the primary band, in a relation adjusting the effective size of the hat or cap, and in at least some settings of said connections maintaining an air circulation gap between the primary band and the inner band, with the width of said gap varing in correspondence with the setting of said connections; and
a third detachable connection between said bands at an intermediate location circularly between said first and second connections and attaching said bands together in any of different spaced relationships in different settings of the first and second connections;
said third connection including a flexible attaching tube secured to one of said bands at said intermediate location, first Velcro projections carried by said attaching tube, and second Velcro projections carried by the other band and detachably connectible to said first Velcro projections carried by said attaching tube;
said attaching tube being adapted to flex in a relation permitting movement of said first Velcro projections carried thereby toward and away from said one band, to thereby maintain the attachment between said bands at said intermediate location in said different spaced relationships of the bands, and permitting complete detachment of the inner band by separation of the Velcro projections of all of said first, second and third connections.

7. A ventilated hat or cap comprising:
a crown;
means forming a primary band at the bottom of said crown;
an inner adjusting sweat band extending along an inner side of said primary band at a location to engage and extend across the front of a user's head and having two ends essentially at opposite sides of the user's head;
first and second connections at said two ends respectively of said inner band connecting said ends thereof to said primary band at opposite sides of the user's head;
each of said connections including two sets of Velcro projections carried by said two bands respectively and interengageable to secure the corresponding end of the inner band to the primary band detachably and in any of a series of different positions adjusted longitudinally of the primary band, in a relation adjusting the effective size of the hat or cap, and in at least some settings of said connections maintaining an air circulation gap between the primary band and the inner band, with the width of said gap varying in correspondence with the setting of said connections; and
a third detachable connection between said bands at an intermediate location circularly between said first and second connections and attaching said bands together in any of different spaced relationships in different settings of the first and second connections;
said third connection including a flexible attaching tube secured at one side thereof to one of said bands at said intermediate location, first Velcro projections on the opposite side of said attaching tube, and second Velcro projections carried by the other band and detachably connectible to said first Velcro projections on the tube;
said attaching tube being adapted to flex in a relation permitting movement of said first Velcro projections carried thereby toward and away from said one band, to thereby maintain the attachment between said bands at said intermediate location in said different spaced relationships of the bands, and permitting complete detachment of the inner band by separation of the Velcro projections of said first, second and third connections.

4,274,158
EVACUATED DIVING SUIT INSULATION
Louis A. Pogorski, Toronto, and Lorne A. Kuehn, Downsview, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ontario, Canada
Filed Apr. 2, 1979, Ser. No. 26,304
Claims priority, application Canada, Apr. 14, 1978, 301157
Int. Cl.³ A62B *17/00*
U.S. Cl. 2—2.1 R **17 Claims**



1. An insulating material suitable for use in diving suits and the like, comprising a multiplicity of layers of a flexible, stretchable material, said layers including a central core consisting of a gas permeable layer of a material that is substantially non-compressible when at least partially evacuated and subject to hydrostatic pressure when immersed in water; said layers further including two other layers impermeable to gase-

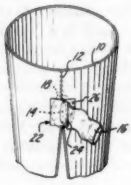
ous fluids, each of said two other layers being of a stretchable material, the central core being disposed intermediate said two other layers and means connected to said central core for selectively inflating and deflating it.

9. A diver's garment suitable for wear by a diver in a cold submarine environment; said garment having arm and leg sections, and a body section, said sections being joined together and provided with at least one fastening means to enable the garment to be put on and taken off; each section of said garment comprising a multiplicity of layers of a flexible, stretchable material, and including a central core consisting of a gas permeable multicomponent layer of a material that is substantially incompressible when at least partially evacuated and subject to a hydrostatic pressure in said submarine environment, said layers further including two other layers each impermeable to gases and fluids and being positioned on opposite sides of the central core, there further being provided sealable closure means in one of the gas impermeable layers, thereby to enable the central core, selectively, to be placed under a sub-atmospheric or superatmospheric pressure.

4,274,159
WATERPROOF ZIPPER

Robert Schmidt, 314 Fourth St., Saddle Brook, N.J. 07662

Filed May 22, 1980, Ser. No. 152,259
Int. Cl.³ A41D *13/00*
U.S. Cl. 2—2 **2 Claims**

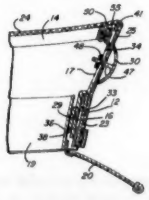


1. A waterproof relief outlet in a chest wader, comprising:
(a) a waterproof foldable tubular funnel, sealably attached to the wader in the vicinity of the wader crotch;
(b) a funnel housing;
(c) means for restraining the tubular funnel in a fluid-tight folded condition;
whereby a wearer of the chest wader can relieve himself by removing the restraining means and unfolding the tubular funnel to project out of the housing.

4,274,160
UNIFORM CAP

Bernard Bloom, Chicago, Ill., assignor to Midway Cap Company, Chicago, Ill.

Filed Jan. 30, 1978, Ser. No. 873,351
Int. Cl.³ A42B *1/02*
U.S. Cl. 2—195 **1 Claim**

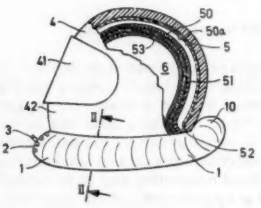


1. In a uniform cap having a frame, a flexible cover adapted to be fitted over said frame, a resilient grommet within said cover extending peripherally at the top thereof to exert outward pressure thereon, a holder secured adjacent the front of said frame defining an upwardly opening slot, and an upstanding support member of molded plastic material, the support member having a connecting portion removably received in the holder slot, the improvement comprising:
a loop portion extending rearwardly adjacent the top edge of said support member defining a slot, said loop portion having releasable connector means for engaging cooperating connector means, said support member allowing the grommet to be joined to said loop portion by cooperating connector means carried by said grommet and engage with said releasable connector means, and
a strap carried by said grommet, said strap in turn carrying said cooperating connector means adapted to engage said releasable connector means.

4,274,161
CRASH HELMET COLLAR

Brian J. Littler, Frankfurter Strasse 84, D-6051 Nieder-Roden, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,525
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1976, 2654051
Int. Cl.³ A42B *3/02*; A41B *3/00*
U.S. Cl. 2—413 **17 Claims**



1. A collar device for use with a protective helmet having a bottom edge for the protection of a motorcyclist in an accident, comprising:
an elongated inflatable tubular body adapted to substantially surround a motorcyclist's neck, said body being sized and positioned, when inflated to be in contact substantially with the entire lower edge rim of the helmet and the upper trunk of the motorcyclist's body, to transmit to, and cushion against, the motorcyclist's body, forces generated at the helmet, thereby to protect the neck;
securing means operable in a closed mode for securing the ends of the collar in adjacent relationship to close the collar around the neck; and in an open mode to release the ends for removal of said collar from the neck.

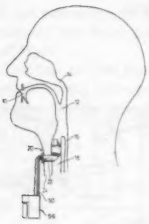
4,274,162
ARTIFICIAL REPLACEMENT FOR A LARYNX

Michael Joy, 118 Burnhamthorpe Rd., Islington, Ontario; Richard E. Moon, 100 Wellesley St. E., Apt. 1013, Toronto, Ontario; Abul Quashem, 93 Hanson Rd., Mississauga, Ontario; Alex Lo, 89 Wilcock St., Toronto, Ontario, and Vijay S. Dayal, 12 Harper Ave., Toronto, Ontario, all of Canada

Filed May 23, 1979, Ser. No. 41,960
Int. Cl.³ A61F *1/20*
U.S. Cl. 3—1.3 **10 Claims**

1. A larynx replacement for installation in a patient's trachea, and comprising:
a sleeve adapted for surgical insertion into the trachea to extend along the axis of length thereof, the exterior of said sleeve being adapted to fit in substantially airtight manner against the interior walls of the trachea;
a passageway extending lengthwise through said sleeve, so as to form a part of the trachea after installation of the sleeve therein;
a valve operable to open and close said passageway;
sensing means located at the upper part of said sleeve, above

the valve, and operatively connected to cause movement of the valve in response to conditions sensed by said sensing means;



a conduit extending transversely of said sleeve and providing air communication between the trachea, at a point below the valve, and the exterior of a patient's neck after surgical installation of said larynx replacement therein.

4,274,163

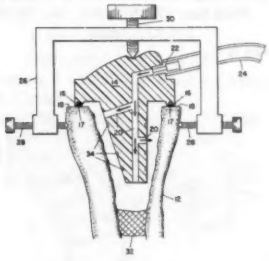
PROSTHETIC FIXATION TECHNIQUE

Lawrence L. Malcom, San Diego, and F. Richard Convery, La Jolla, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Jul. 16, 1979, Ser. No. 57,822

Int. Cl.³ A61F *1/00*

U.S. Cl. 3—1.91 **20 Claims**



1. A method for securing an implant to a bone comprising the steps of:

sealing the implant to the bone to form an enclosed space between the implant and the bone; and

providing a source of medical cement at high pressure;

supplying medical cement at high pressure from said source through a closed channel to the space between the implant and the bone; and

maintaining the medical cement under pressure while the medical cement solidifies.

4,274,164

ENDOPROSTHESIS FOR A HIP JOINT, ESPECIALLY FOR THE HIP JOINT OF A HUMAN BEING

Günther Rehder, Stuhr, and Johann Rusdea, Wiesbaden, both of Fed. Rep. of Germany, assignors to Orthoplant Orthopadische Implantate GmbH & Co. KG, Bremen, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,811

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834298

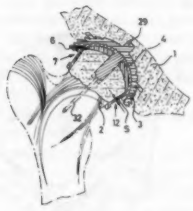
Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.913 **8 Claims**

1. A femur head cap for a hip joint endoprosthesis which can be implanted without cement, comprising:

an inner plastic shell to be placed on a femur head, said inner shell including a top section the inner surface of which conforms to the end face of the femur head and the outer surface of which is generally hemispherically shaped, and a jacket extending from said top section for fitting about a treated circumferential surface of the femur head, the inner surface of said jacket conically narrowing in the direction away from said top section, said inner shell having a slot which extends between the free edge of said jacket and the center of said top section to enable said jacket to expand to slip over the largest diameter of the femur head when said inner shell is placed over the femur head; and

a metallic outer shell having a generally hemispherical inner surface which corresponds to the outer surface of said top



section of said inner shell so that said outer shell can be fitted over said top section, said outer shell also having a generally hemispherical outer surface wherein the height of said outer shell as measured from the free end plane to the center of the outer surface of said outer shell is less than the radius of curvature of the outer surface of said outer shell, said outer shell including an end section adjacent the free end thereof for engaging the outer surface of said jacket of said inner shell, the inner surface of said end section conically narrowing in the direction toward the free end of said outer shell, and a pin extending from the center of the inner surface of said outer shell for engaging said inner shell when said outer shell is fitted over said inner shell to operatively align both of said shells.

4,274,165

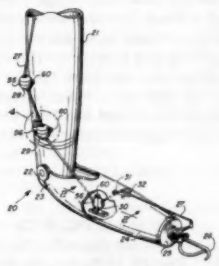
SELF-ALIGNING CABLE GUIDE ASSEMBLY

Joseph J. Ivko, and Renette Ivko, both of 1644 Magellan Dr., Sarasota, Fla. 33589

Filed Feb. 11, 1980, Ser. No. 120,155

Int. Cl.³ A61F *1/06*

U.S. Cl. 3—12 **12 Claims**



1. A self-aligning cable guide assembly operatively associated with a support surface and adapted to receive and guide a cable therethrough in a substantially stress-free relationship therewith, said assembly comprising:

mounting means attachable to a support surface;

a ball member having a cable guide hole defined therethrough;

a connecting member operatively associated with said mounting means and extendable outwardly therefrom for operative engagement with said ball member; and

a band member circumferentially disposed about said ball member for operative engagement with said ball member to secure said connecting member to said ball member.

4,274,166

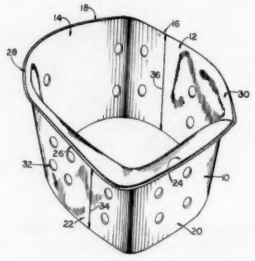
SOCKET OR CAST BRIM

Gary R. Chambers, 705 McFarland St., Morristown, Tenn. 37814

Filed May 3, 1979, Ser. No. 35,461

Int. Cl.³ A61F 1/02

U.S. Cl. 3—17 R **6 Claims**



1. A semi-rigid upper thigh brim suitable for use with a cast for treating fractures comprising:

a sleeve having top and bottom edges and having a preselected cross-section corresponding to the cross-section of the upper thigh of a human being, said sleeve for fitting around the upper thigh of a patient and being made of a resilient material suitable for conforming substantially to the upper thigh of said patient, said sleeve including a front and outside thigh portion having substantially straight sides of a first selected length, and each of said front and outside straight sides having feathered top edges, and a back portion and inside thigh portion of a second selected length, which second selected length is less than said first selected length, said sleeve being suitable for bonding thereto a pliable cast material which subsequently cures to a hard and rigid material suitable for bracing and immobilizing a fracture and said sleeve defining a multiplicity of apertures to receive said pliable cast material to strengthen said bond; and

contact surfaces integrally moded to said top edges of said back portion and said inside thigh portion of said sleeve and shaped to form a smooth transistion from said feathered top edges of said front and outside portions and to provide padding and support to the buttocks and groin areas of said patient, said front, back inside thigh, outside thigh portions and said contact surfaces being molded with a thickness such that said brim provides both cushioning and a semirigid structure between said cast and said patient.

4,274,167

OSCILLATING BED

Joseph D. Immel, 4809 Green Acres Rd., St. Joseph, Mo. 64506

Filed Aug. 31, 1979, Ser. No. 71,689

Int. Cl.³ A62G 7/10

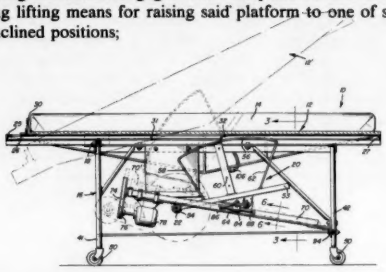
U.S. Cl. 5—62 **11 Claims**

1. In a therapeutic bed, the combination of:

a bed support frame having ground engaging legs;

a platform for supporting a user of the bed; said platform having a pivot joint connected toward one end thereof, said pivot joint also being connected to said bed support frame for allowing said platform to pivot about a horizontal axis to a plurality of inclined positions;

a lifting mechanism engaged with said platform and including lifting means for raising said platform to one of said inclined positions;



an eccentric shaft mounting said lifting mechanism, said lifting mechanism including at least one arcuate support slidably engaging the bottom of said platform and connected for rotative movement about said eccentric shaft for raising said platform; and

power means for rotating said eccentric shaft to cause vibratory motion of said lifting mechanism and said platform.

4,274,168

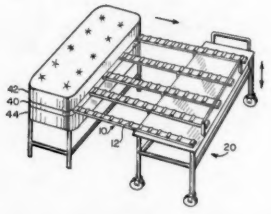
PATIENT TRANSFER APPARATUS

Norma M. Depowski, 1089 Hunter Dr., Elgin, Ill. 60120

Filed Sep. 17, 1979, Ser. No. 75,925

Int. Cl.³ A61G 7/10

U.S. Cl. 5—81 B **4 Claims**



1. An apparatus for transferring a patient on a mattress between a hospital bed base member, and a cart comprising: projections affixed to the upper surface of the cart having anti-friction means mounted thereon for conveying loads, a foundation member interposed between the bed base member and the mattress, wherein said foundation member has grooves defined therein for receiving said projections, whereby the mattress is supported by said anti-friction means on said projections when said projections are inserted into said foundation member.

4,274,169

BED COVERING HAVING TUCKABLE PORTION

Natalie C. Standiford, 1 Englewood Rd., Baltimore, Md. 21210

Filed May 3, 1979, Ser. No. 35,545

Int. Cl.³ A47G 9/02

U.S. Cl. 5—502 **6 Claims**

1. A reversible bed covering, which comprises:

a first layer of fabric material having a head portion, two side edges and a foot edge extending completely between the side edges;

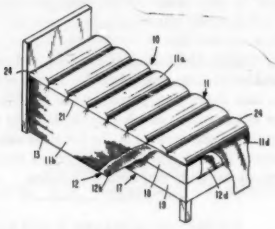
a second layer of fabric having a head portion, two side

edges and a foot edge extending completely between the side edges;

the first and second layers being of the same size and placed in interfacing relation;

the head portion and the side edges of the first layer being secured, respectively, to the head portion and the side edges of the second layer;

the foot edges of the first and second layers being unsecured between the side edges of the first and second layers;



each of the first and second layers of fabric material being formed with a central portion which normally rests atop a bed;

the central portions of the first and second layers being in interfacing relation;

a plurality of pockets formed in the first and second layers, in the area of the central portions;

and heat-insulating material located within the plurality of pockets.

4,274,170

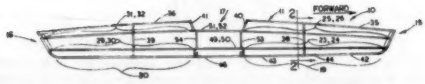
COLLAPSIBLE KAYAK

Douglass E. Simpson, 2 - 3443 West 2nd Ave., Vancouver, British Columbia, Canada (V6R 1J3)

Filed Aug. 28, 1978, Ser. No. 937,540

Int. Cl.[3] B63B *37/72, 7/04*

U.S. Cl. 9—1.4 **16 Claims**



1. A collapsible kayak having a framework characterized by a plurality of longitudinal members including forward and aft keelson member portions, forward and aft port and starboard chine and gunwale member portions, and forward and aft longitudinal deck members; formers and a cockpit structure, the longitudinal members releasably interconnecting the cockpit structure with the bow and stern of the kayak; the cockpit structure including:

(a) a keelson member mid portion, port and starboard chine member mid portions spaced on opposite sides of the keelson member mid portion, and port and starboard gunwale member mid portions spaced above the chine member mid portions, the mid portions interconnecting longitudinally the respective forward and aft longitudinal members,

(b) forward and aft interconnecting members interconnecting adjacent member mid portions so as to form a frame of generally parallel mid portions, each interconnecting member having a respective port and starboard portion which is rigidly and non-hingedly fixed to the respective port and starboard chine and gunwale member mid portions to form rigid port and starboard cockpit frame halves,

(c) the port and starboard cockpit frame havles being hinged relative to each other about the keelson member mid portion by at least one of said port and starboard portions of said interconnecting members being hinged to said keelson member mid portion to effectively permit the cockpit structure to be folded about the keelson member mid portion to permit the port and starboard mid portions to approach each other,

(d) forward and aft transverse deck members adapted to extend between the gunwale member mid portions to define with the gunwale member mid portions a cockpit opening to receive a kayakist, each transverse deck member having at least one end releasably connected adjacent an opposite end of one of the gunwale member mid portions, the forward and aft longitudinal deck members being releasably connected to the forward and aft transverse deck members.

so that when the framework is assembled the forward and aft keelson, chine and gunwale member portions are connected to the respective keelson, chine and gunwale member mid portions of the cockpit structure to form a generally smoothly curved framework.

4,274,171

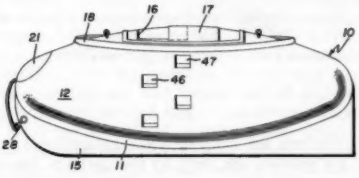
LIFEBOAT

Clayton T. Enzian, Jr., 3 Edgewater Dr., Wareham, Mass. 02571

Filed Feb. 27, 1978, Ser. No. 881,644

Int. Cl.[3] B63C *9/02*

U.S. Cl. 9—4 R **4 Claims**



1. Lifeboat, comprising:

(a) a main body having an outer skin with an outer surface of a generally prolate spheroidal shape and an inner skin with an inner surface generally concentric with the outer surface of said outer skin **72**, said outer and inner skins being formed of a fiberglass-reinforced, high-density polymer **73** to form a compartment therebetween,

(b) a keel formed of heavy material extending from end to end of the main body along a bottom portion, a portion of said keel being a body of circular segmental form in cross-section integrally formed in the bottom portion of the inner chamber and having a flat upper surface that acts as a floor for the inner chamber,

(c) a hatchway aperture located at the top of the main body intermediate of the ends thereof,

(d) a hatch having the general shape of the aperture slidably carried on the main body and movable from a first position where it resides in sealing relation to the aperture to a second position where it is non-coextensive with the aperture, a downwardly-extending apron being integrally formed with both the inner and the outer skins and extending inwardly from the inner surface of the inner skin in the form of a closed plane figure that extends around the hatchway aperture, the apron serving to trap air in the upper portion of the inner chamber, the hatchway aperture and the hatch being of generally rectangular shape and straight guides being integrally formed on the outer

skin of the main body parallel to the sides of the aperture to carry the hatch for sliding movement relative to the aperture,

(e) an outwardly and upwardly-extending flange integrally formed on the outer skin surface of the main body in the form of a closed plane figure that extends around and is substantially spaced from the hatchway aperture, the flange serving to inhibit wave flow into the aperture and to collect rain water,

(f) a storage recess formed on the surface of the main body,

(g) a cover carried in the recess with an outer surface that forms an even and smooth continuity with the outer surface of the main body,

(h) means for locking the cover in place, which means is releasable from the inner chamber, and

(i) a drogue stored within the recess and released by release of the cover.

4,274,172

RAMPS

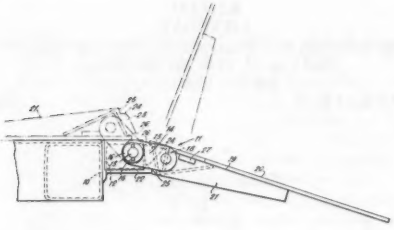
Leslie C. Franklin, Hitchin, England, assignor to Ratcliff Tail Lifts Limited, Hertfordshire, England

Filed Mar. 23, 1979, Ser. No. 23,314

Claims priority, application United Kingdom, Mar. 29, 1978, 12312/78

Int. Cl.[3] **E01D** *1/00*

U.S. Cl. 14—69.5 **16 Claims**



1. A platform and ramp apparatus comprising a ramp and means for securing the ramp to the platform, the securing means comprising link means rotatably mounted on the platform to rotate about a first axis of rotation fixed relative to the platform, the ramp being rotatably mounted on the link means to rotate about a second axis of rotation parallel to the first axis of rotation, stop means being provided on the platform and engagement means being provided on the ramp, which engagement means comprise a first engagement portion and a second engagement portion, the first engagement portion engaging the stop means to define a first ramp position in which the ramp provides surface sloping downwardly from the platform, and the second engagement portion engaging the stop means to define a second ramp position in which the ramp provides a surface sloping upwardly from the platform to form a barrier, rotation of the link means about the first axis of rotation allowing disengagement of the stop means and engagement means whereby the ramp may be moved between the two ramp positions.

4,274,173

POWER DRIVEN BRUSH ASSEMBLY

Howard Cohen, 2791 W. 5th St., Brooklyn, N.Y. 11224

Filed Jul. 5, 1979, Ser. No. 54,943

Int. Cl.[3] **A46B** *13/02*

U.S. Cl. 15—28 **3 Claims**

1. A power driven brush assembly for cleaning teeth or the like, said assembly comprising:

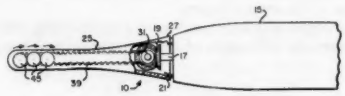
a hollow handle element;

a hollow extension for said handle element;

drive means providing energy to said extension;

a plurality of brush supports in said extension at an end thereof remote from said handle element

a power transmission between said drive means and at least two of said brush supports;



and a plurality of brushes at least one of said brushes contoured with a cup-shaped cavity at one end thereof remote from said shaft, implementing the facility with which the outer edges of the brush may be bent to approximate the contours of the surface to be brushed said brush supports mounted in said handle extension so that adjacent brush segments move in opposed directions.

4,274,174

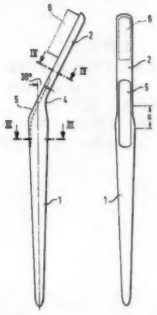
TOOTHBRUSH

Ulrike Ertel, Munich, Fed. Rep. of Germany, assignor to G.R.P. Gesellschaft für Rationelle Psychologie oHG, Fed. Rep. of Germany

Continuation of Ser. No. 4,921, Jan. 19, 1979, abandoned. This application Feb. 6, 1980, Ser. No. 119,016

Int. Cl.[3] **A46B** *9/04, 5/02*

U.S. Cl. 15—143 R **9 Claims**



1. A toothbrush body having a stem-like grip to be gripped in the hand of a human operator, this grip adjoining a bristle carrier in an intervening bend region so that the bristle carrier extends forwards, and the grip extends rearwards from this bend region, said bristle carrier having a front side and a back side, said toothbrush body comprising:

(a) said grip outside of said bend region extending conically rearwardly, decreasing in transverse cross-sectional area from said bend region towards a rear tip;

(b) said grip being of such length as to rearwardly extend to beyond the gripping hand of the operator when the operator's hand grips said grip, with the operator's opposed thumb and forefinger being on or forwardly of said bend region;

(c) said bristol carrier being elongated, straight and rounded on a back side thereof, said bristle carrier extending forwardly from said bend region at an angle of about 25° to about 35° to the longitudinal axis of said grip;

(d) said bristle carrier having a length of about 70 mm to about 80 mm and a substantially constant width along a longitudinally extending axis;

(e) said grip within said bend region extending conically forwardly, decreasing in transverse cross-sectional area as it extends axially towards said bristle carrier within said

bend region, thereby forming a depression on the back side of said toothbrush body in said bend region;

(f) surface means defining a flat, longitudinally elongated continuous grip depression of substantially constant width in the front side of said toothbrush body extending longitudinally over the entire bend region and both rearwardly into said stem-like grip rearwardly of said bend region and forwardly into said bristle carrier along at least a fourth the length of said bristle carrier outside said bend region; and

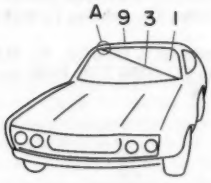
(g) a bristle zone defined on the front side of said bristle carrier and extending longitudinally thereon for substantially less than half the length of said bristle carrier from adjacent the forward end of said bristle carrier with said bristle carrier front side being substantially planar in said bristle zone.

4,274,175

WIPING DEVICE

Tadashi Nishikawa, 1-32 Nakanodori, Higashi-Sumiyoshi, Osaka, Japan

Filed Oct. 4, 1978, Ser. No. 948,411
Int. Cl.³ B60S 1/06
U.S. Cl. 15—250.24 **6 Claims**



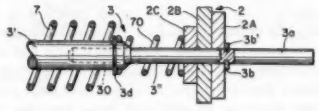
1. A wiping device comprising: an annular belt adapted to revolve along the entire periphery of a windowpane, said periphery of said windowpane being non-circular; and a wiper blade joined at its opposite ends to said annular belt and extending across the windowpane said wiper blade having a variable length, capable of varying in response to positioning of said opposite ends on said annular belt.

4,274,176

VACUUM OPERATED DESOLDERING TOOL

Hans Undin, Akersberga, and Hans Wiener, Täby, both of Sweden, assignors to Toolema AB, Stockholm, Sweden

Filed Nov. 20, 1979, Ser. No. 96,026
Int. Cl.³ A47L 5/20
U.S. Cl. 15—341 **8 Claims**



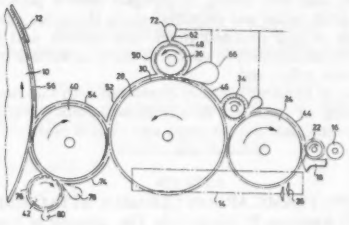
1. A vacuum operated desoldering tool comprising a tubular body, means defining a nozzle at one end of said tubular body, piston means mounted for reciprocal movement within said tubular body to produce a suction effect through said nozzle, said piston means including a piston rod and a piston member slideably mounted on said piston rod for movement relative thereto, spring means operably interposed between said piston rod and said piston member applying a spring force urging said piston member relative to said piston rod in a direction toward said nozzle, and stop means interposed between said piston rod and said piston member to limit the movement of said piston member relative to said piston rod in a direction toward said nozzle.

4,274,177

CARDING

Keith Grimshaw, Todmorden, and Roy Taylor, Oldham, both of England, assignors to The English Card Clothing Company Limited, West Yorkshire, England

Continuation of Ser. No. 869,297, Jan. 13, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,376
Claims priority, application United Kingdom, Jan. 21, 1977, 2431/77
Int. Cl.³ D01G 15/02, 15/40
U.S. Cl. 19—99 **22 Claims**



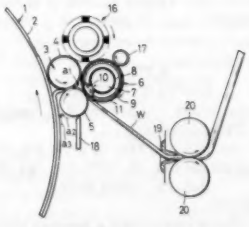
1. A flat type carding machine which includes a roller with card-clothing having flat-topped teeth; a trash removing roller set close to said card-clothed roller and adapted to remove trash projecting above the teeth of said card-clothed roller; a trash deflector arranged close to the part of said card-clothed roller which is on the approach side to said trash removing roller, and having a trailing end close to said trash removing roller; a cowling enclosing at least the part of said trash removing roller which is moving away from said card-clothing roller, and having an inlet end close to said card-clothed roller, said cowling at least in the region adjacent said inlet end being spaced radially from the periphery of said trash removing roller; said cowling and said trailing end of said deflector defining an opening through which trash struck off said card-clothed roller can escape, and a suction nozzle arranged with its inlet closely adjacent to said opening for keeping said opening free from blockage, the arrangement of said deflector, said cowling and said suction nozzle substantially preventing trash travelling around with said trash removing roller.

4,274,178

DEVICE FOR STRIPPING A FIBROUS WEB FROM A DOFFER IN A CARDING MACHINE

Kyoichi Hotta, Nagoya, Japan, assignor to Kabushiki Kaisha Kyowa Kikai Seisakusho, Japan

Filed Mar. 28, 1979, Ser. No. 24,528
Int. Cl.³ D01G 15/46
U.S. Cl. 19—106 R **6 Claims**



1. A device for stripping a fibrous web from a doffer in a carding machine, said device comprising:

a doffing roller having in its periphery a mechanical stripping means corresponding in width with said doffer, said doffing roller being provided adjacent to and in parallel with said doffer to be positively rotated in the same direction as said doffer for stripping said web from said doffer;

a guide roller provided under said doffing roller in parallel with said doffer and adapted to be positively rotated in a direction opposite to the direction of rotation of said doffing roller for guiding said web along its surface as said web is stripped from said doffer;

a suction roller provided adjacent to said guide roller in parallel with said doffing roller on the side of said doffing roller and said guide roller opposite said doffer, said suction roller having a porous punched roller positively rotated in the same direction with said doffer, and a stationary duct extending longitudinally within said punched roller, said duct having an elongate suction port facing said guide roller and extending along the entire effective length of said punched roller, said suction port being located immediately inwardly of the inner surface of said punched roller; and

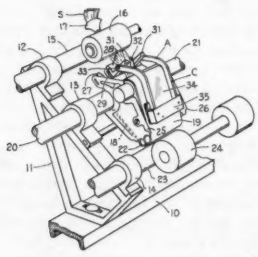
a source of negative pressure connected with said duct for drawing air from the vicinity of said doffing and guide rollers into said duct through said suction port.

4,274,179

SPINNING FRAME APRON CLEARER ATTACHMENT

Kenneth P. Swanson, Ft. Lauderdale, Fla., assignor to Progressive Equipment, Inc., Simpsonville, S.C.

Filed Jun. 18, 1979, Ser. No. 49,300
Int. Cl.³ D01H 5/60
U.S. Cl. 19—245 **3 Claims**



1. An apron clearer attachment for use and positioning upon an upper mounting support portion of a sliver guide through which an individual sliver is fed to an apron comprising:

aligned upwardly extending arms spaced to accommodate a single sliver guide;

disengageable mounting means carried adjacent one end of said arms for attachment adjacent said upper mounting support portion;

downwardly extending support means carried adjacent the other end of said arms; and

a clearer pad carried by and extending across said downwardly extending support means.

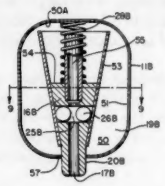
4,274,180

JEWELRY CLUTCH

Olof V. Anderson, North Kingstown, R.I., assignor to Auson Incorporated, Providence, R.I.

Division of Ser. No. 903,484, May 8, 1978, Pat. No. 4,195,391.
This application Jun. 18, 1979, Ser. No. 49,340
Int. Cl.³ A44B 9/00
U.S. Cl. 24—155 BR **1 Claim**

1. A jewelry clutch comprising a housing circular in cross section and having oppositely located end walls, said housing fabricated from two vertical half sections fastened together to form a chamber, a circular tapered rail fastened to said housing within said chamber, a circular tapered carrier, said last mentioned taper being complementary to said first mentioned tapered rail and slidably mounted therein, said carrier having a neck, an axial bore, a lateral passageway, a bottom and a stem, or orifice in one of said oppositely located end walls, said neck



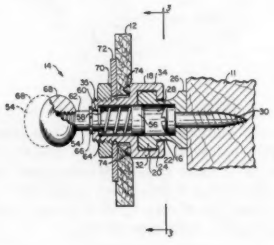
projecting through said orifice, said lateral passageway aligned with said axial bore, a plurality of gripping devices located in said lateral passageway, a spring interposed between said bottom and the other of said oppositely located end walls, and a pin slidably mounted in said axial bore for engagement and disengagement with said plurality of gripping devices.

4,274,181

PIVOTAL AND RELEASABLE STRAP COUPLING

Helmut F. K. Schaller, Kuckucksweg 16, 8501 Feucht, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,888
Int. Cl.³ G10G 5/00; F16B 21/07
U.S. Cl. 24—201 A **9 Claims**



9. A coupling for pivotally and releasably connecting one end of a strap to a musical instrument or other body, said coupling comprising a post adapted to be fixed to a body and a catch adapted to be fixed to a strap, said post having an upper end with a generally circular head portion and also having a generally circular neck portion immediately below said head portion of smaller diameter than said head portion, said post also having an opening of generally circular cross section extending axially downwardly from its upper end, said catch having a cavity with a laterally facing mouth and a bottom wall defining the bottom of said cavity which bottom wall has a slot therein communicating with said mouth and extending some distance inwardly therefrom, said slot having a width slightly greater than the diameter of said post neck portion and less than the diameter of said post head portion, said head portion of said post being movable into and out of said cavity by being moved laterally of said catch through said mouth with said neck portion of said post extending through and moving along said slot in said bottom wall, a plunger carried by said catch body for vertical movement between lower and upper limited positions relative to said body, and a spring biasing said plunger to said lower limited position, said plunger extending upwardly beyond said catch body and having an exposed upper part which may be grasped by a user to lift said plunger from said lower to said upper position, said plunger also having a lower part which in said lower position of said plunger extends downwardly into said cavity and is receivable

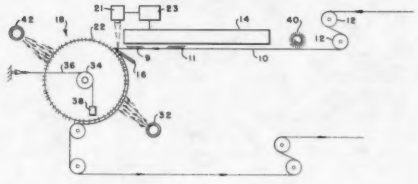
in said opening of said post to hold said post and said catch in connected condition while nevertheless allowing said catch to pivot relative to said post, and said lower end of said plunger when said plunger is raised to its upper position being located above the path of said post as it is moved laterally into and out of said cavity so that when said plunger is raised to said upper position said post may be moved laterally into and out of said cavity.

4,274,182

APPARATUS FOR PRODUCING A SIMULATED STRIA FABRIC

John M. Greenway, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 10, 1978, Ser. No. 922,874
Int. Cl.³ D06C *23/04*
U.S. Cl. 26—2 R **1 Claim**



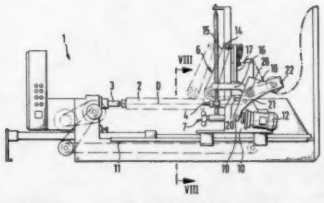
1. Apparatus for patterning fabric having a thermoplastic pile, including: heater means for heating the pile of said pile fabric to above its glass transition temperature without disturbing the orientation of fibers in the pile of said fabric; cool pattern roll means arund which said pile fabric is wrapped, the pile of said pile fabric contacting said cool pattern roll means; means for cooling the pile of said pile fabric to a temperature which is below the glass transition temperature of said pile fabric while the pile is in contact with said cool pattern roll means; and means for advancing said pile fabric past said heater means and around said pattern roll means, said apparatus including an arcuate support means over which said fabric may be passed closely adjacent and substantially parallel to the periphery of said pattern roll, said arcuate support means including an arcuate support member having a plurality of slits formed therein to stabilize the shape of said arcuate support means against warping.

4,274,183

APPARATUS FOR COPY-MACHINING OF A WORKPIECE

Erich Schmidt, Mauerbach, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges., Austria

Filed May 16, 1979, Ser. No. 39,607
Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821788
Int. Cl.³ B23B *3/28*
U.S. Cl. 29—28 **9 Claims**



1. In apparatus for copy-machining a workpiece from a master model, the apparatus being moved along the workpiece by a feed mechanism in response to the scanning of said master model, the improvement comprising:

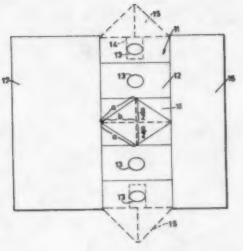
a first tool and a second tool mounted on said feed mechanism, a pivot arm for supporting the second tool for movement relative to the first tool in the direction of movement along said workpiece, and means for locking said pivot arm and second tool at a desired position, said first and second tools engaging the workpiece in staggered relationship to one another, with reference to the direction of movement along said workpiece, wherein the relative positions of said first and second tools are adjustable by movement of the second tool in response to movement of the pivot arm and locking the pivot arm and second tool at the desired position.

4,274,184

MESH DISTRIBUTION WHEELS

Svein Nordtvedt, Blomvikveien 27, Breivik, 5074 Godvik, Norway

Filed Oct. 11, 1978, Ser. No. 950,287
Claims priority, application Norway, Oct. 20, 1977, 773596; Aug. 31, 1978, 782965
Int. Cl.³ B65H *17/38*
U.S. Cl. 29—121.1 **20 Claims**



1. Mesh distribution wheel for handling seine lines or like net materials and provided with a series of pins directed radially outwards, said pins being adapted to engage their respective meshes in a series of meshes in said seine line or like net material and being arranged in series with a mutual pitch corresponding to the number of divisions of the series of meshes at a definite degree of mesh inlay and wherein the pins, at least when regarded in the one lateral direction, have a saw-toothed course from foot portion to outer portion and each pin in a region adjacent its root portion has a definite cross-section selected from (a) one corresponding to the area of a mesh opening in a mesh having a definite mesh size and definite mesh form and (b) one which together with a neighbouring pin defines a cross-section corresponding to the area of a mesh opening in a mesh having a definite mesh size and definite mesh form.

4,274,185

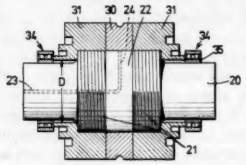
ROLL ASSEMBLY FOR USE IN ROLLING A WIRE ROD

Teruo Mifune; Keiji Noto, both of Muroran; Yasuo Otsu, Amagasaki, and Kotaro Hagiwara, Takarazuka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 812,627, Jul. 5, 1977, abandoned. This application Feb. 28, 1980, Ser. No. 125,748
Int. Cl.³ B21B *31/08*
U.S. Cl. 29—123 **5 Claims**

1. A roll assembly for use in rolling a wire rod comprising an arbor having a slightly tapered periphery at the middle portion thereof, a liquid pressure applying channel provided in the arbor extending to the tapered periphery, a cemented carbide sleeve fitted with an interference fit around the tapered periphery, opposing tightening means securely holding the sleeve by constricting it at both ends, and a roll neck bearing mounted

around each end portion of the arbor, at least one of said opposing tightening means being a tightening ring threaded onto the arbor, the ring having an integral fillet member at the



end remote from the sleeve with the inside diameter of the fillet member being larger than the outside diameter of the inner race of the roll neck bearing.

4,274,186

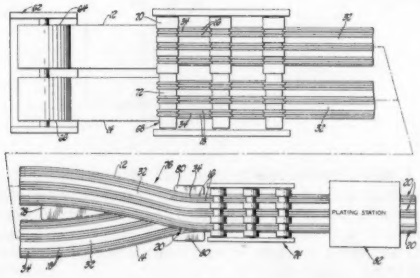
HEAT EXCHANGER

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 910,129, May 26, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,241

Int. Cl.³ B23P *15/26*

U.S. Cl. 29—157.3 D **3 Claims**



1. A method of making a heat exchanger assembly including the steps of; rolling longitudinal grooves in a pair of plates on a common mill, aligning the plates and mating the longitudinal grooves to define fluid-carrying channels by crossing over the plates to allow the plates to be aligned with the grooves mating to define fluid-carrying channels and simultaneously seam-welding the plates together along engaging surfaces of the plates.

4,274,187

SPRING INSTALLATION TOOL FOR ARTICLE LOADING MACHINE

P. Eric Painter, Stow, and Curtis P. Fisher, Cuyahoga Falls, both of Ohio, assignors to A-T-O, Inc., Willoughby, Ohio

Filed Jun. 20, 1979, Ser. No. 50,181

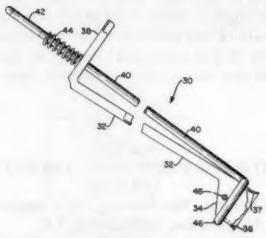
Int. Cl.³ B23P *19/04*

U.S. Cl. 29—225 **7 Claims**

1. A tool for installing a spring on an article loading machine, comprising:

a frame member;

a spring receiving means connected to a first end of said frame member for receiving a spring thereon, said spring receiving means having a tapered bore passing therethrough and a flared lip about an end circumference thereof; and



reciprocating means interconnected with said frame means between a second end thereof and said first end for removing the spring from said spring receiving means.

4,274,188

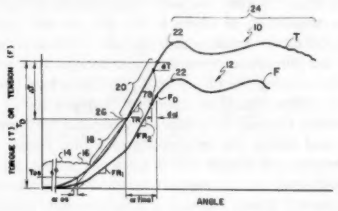
TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and a continuation-in-part of Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Aug. 17, 1979, Ser. No. 67,510

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—240 **2 Claims**



1. Apparatus for tightening seriatim a multiplicity of substantially identical joints having components including at least one threaded fastener to a final desired stress value, below the yield point of any component that can be correlated with stress, appearing in the fastener, comprising

means for rotating the fastener;

means for monitoring a tension related function applied to the fastener and a function of rotation applied to the fastener;

means for calculating a stress value in the fastener below the yield point of any joint component that can be correlated with stress and the location thereof; and

means for stopping the rotating means at a second angle location measured from the first mentioned location.

4,274,189

PILOT BEARING PULLER

Louis M. Conover, 808 S. St. Joseph Ave., Hastings, Nebr. 68901

Filed May 19, 1980, Ser. No. 150,928

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—256 **5 Claims**

1. An apparatus for pulling a bearing from a flywheel or the like, comprising,

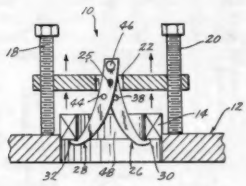
a support means,

a pair of spaced-apart bolt members threadably mounted in said support means,

said support means having a central opening formed therein between said bolt members,

first and second jaw members pivotally mounted on said support means within said central opening and extending therefrom for engagement with the inner diameter of the bearing,

one end of each of said bolt members being adapted to be placed in engagement with the flywheel on opposite sides of the bearing whereby said jaw members will pull the



bearing from the flywheel when said bolt members are threadably rotated in one direction relative to said support means,

each of said jaw members having spaced-apart first, second and third openings formed therein and wherein a third bolt member extends through said support means and the said second openings in said jaw members,

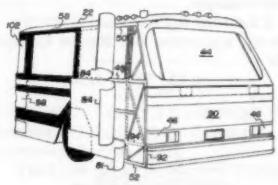
and a fourth bolt member extending through the said first openings in said jaw members to limit the pivotal movement thereof.

4,274,190

TRANSIT BUS MODERNIZATION METHOD

Michael J. Slattery, Roslindale, Mass., assignor to Charles J. Monahan, Quincy, Mass.

Filed May 11, 1979, Ser. No. 38,269
Int. Cl.³ B23P *7/00*
U.S. Cl. 29—401.1 **7 Claims**



1. A method of modernizing the exterior of a bus and converting same from monocoque to frame construction, said method comprising:

(a) stripping away the existing sheathing along the sides of said bus beneath the roof line;

(b) removing the existing window frames and the emergency door from the sides of said bus;

(c) fabricating a rigid generally plane-defining side framework between said side sheathing support beams on each side of said bus to support an exterior skin;

(d) installing new framed windows and an emergency door in said framework;

(e) stretching an exterior skin over said framework; and

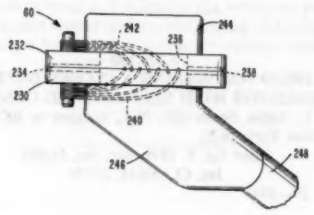
(f) attaching said skin to said framework.

4,274,191

METHOD AND APPARATUS FOR GAPPING WOVEN SLIDE FASTENER STRINGER HAVING ELEMENTS MOUNTED ON LONGITUDINAL MEMBER IN EDGE OF TAPE

James K. Ervin, Meadville, and Nicholas L. Salamon, Linesville, both of Pa., assignors to Textron, Inc., Meadville, Pa.

Filed May 21, 1979, Ser. No. 40,790
Int. Cl.³ B23P *19/04;* **B26D** *1/06*
U.S. Cl. 29—408 **8 Claims**



1. A method of gapping a slide fastener stringer which has a woven tape and a plurality of spaced fastening elements secured on a longitudinal support member which is secured in the edge of the tape by parallel weft thread segments of the tape extending around the support member between the fastening elements, the method comprising the steps of

severing the longitudinal member in the spaces between fastening elements on each side of each of a group of the fastening elements, and

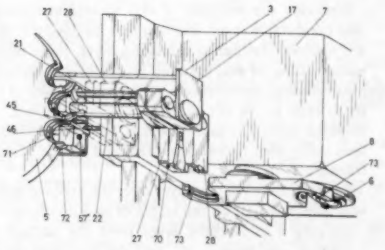
pulling the slide fastener stringer longitudinally between opposed biased blades engaging the elements on opposite sides of the slide fastener stringer to strip the group of fastening elements from the tape.

4,274,192

TOOL SHIFTER

Michio Norimatsu, Oaza Koguchi, Japan, assignor to Kabushiki Kaishi Yamazaki Tekkosho, Aichi, Japan

Continuation-in-part of Ser. No. 875,537, Jan. 30, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 79,994
Claims priority, application Japan, Feb. 4, 1977, 52-12025
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—568 **4 Claims**



1. A tool shifter for a machine tool having a magazine for holding tools with their axes at an angle to the main shaft of the machine tool and having a tool exchange means for exchanging tools on said main shaft, said tool shifter comprising guide means for extending along an axis between the magazine and the tool exchange means, clamp means for engaging the shank of an exchangeable tool and movable along said guide means between a first position adjacent the magazine at which said clamp means is in position to grasp a tool shank of a tool in the magazine and a second position adjacent the tool exchange

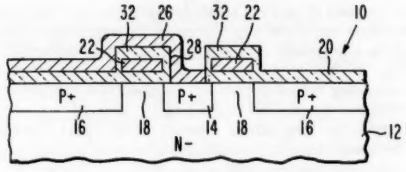
means at which said clamp means is in a position to deliver a tool to the tool exchange means, means on said guide means for turning said clamp means around the axis of the guide means as said clamp means moves along said guide means, clamp opening means adjacent said one position engageable by said clamp means for opening said clamp means when said clamp means engages said clamp opening means, and a single hydraulic cylinder connected to said clamp means for moving said clamp means back and forth along said guide means between said first and second positions.

4,274,193

METHOD FOR MAKING A CLOSED GATE MOS TRANSISTOR WITH SELF-ALIGNED CONTACTS

Rodney L. Angle, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,981
Int. Cl.³ H01L *21/26*
U.S. Cl. 29—571 **17 Claims**



1. The method of making a closed gate geometry MOS transistor comprising the steps of:

(a) selecting a semiconductor substrate of a first conductivity type;

(b) forming a first insulating layer on a surface of said substrate;

(c) forming a conductive layer of semiconductor material on the surface of said first insulating layer;

(d) forming a second insulating layer on the surface of said conductive layer;

(e) forming a masking layer on the surface of said second insulating layer;

(f) defining said masking layer into the form of closed gate geometries;

(g) removing the portions of said second insulating layer, said conductive layer, and said first insulating layer which are exposed through said making layer, there being some undercutting of said masking layer during this step;

(h) introducing conductivity modifiers, opposite in conductivity type to the conductivity of said substrate, into the exposed surface of said substrate, said conductivity modifiers being used to form the drain and source of said MOS transistor;

(i) reforming an insulating layer over the exposed portions of said substrate and on the edges of said conductive layer;

(j) applying a photoresist layer over the surface of said reformed insulating layer, and defining and developing said photoresist layer to expose portions of said reformed insulating layer where ohmic contact is to be made to said substrate;

(k) removing the portions of said reformed insulating layer which directly underlies the edges of said masking layer;

(l) removing the remaining portions of said photoresist layer and said masking layer; and

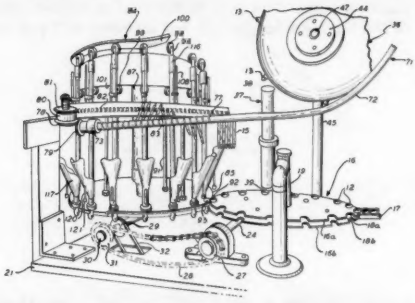
(m) applying a metal layer over the surface of said device, and defining said metal layer to provide ohmic contacts and interconnects.

4,274,194

MACHINE FOR ASSEMBLING ELASTIC BULBS TO FRAGILE TUBULAR ELEMENTS

Olympio C. Rizzo, R.D. #Box 231, Bloomsbury, N.J. 08804

Filed Aug. 29, 1978, Ser. No. 937,747
Int. Cl.³ B23Q *15/00*; B23P *21/00*
U.S. Cl. 29—717 **9 Claims**



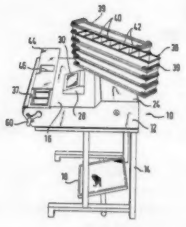
1. Apparatus for automatically assembling the cap, bulb and pipette components of liquid droppers comprising, a rotatable feed wheel having a plurality of receptacles spaced circumferentially therearound, means for rotating said feed wheel, a cap feeding station for placing caps in said receptacles as the feed wheel rotates past said cap feeding station, a bulb feeding station for placing bulbs in said caps as the feed wheel rotates past said bulb feeding station, a rotatable assembly wheel positioned adjacent said feed wheel and having a plurality of assembly fixtures spaced therearound, means for transferring the respective cap and bulb assemblies from the feed wheel to the assembly fixtures on said assembly wheel, means for inserting a pipette into each said assembly fixture after a cap and bulb has been transferred thereto, and means for pressing the cap, bulb and pipette in each said assembly fixture into fully assembled relationship.

4,274,195

ASSEMBLY APPARATUS, PARTICULARLY FOR THE ASSEMBLY OF COMPONENTS UPON CARRIER PLATES

Bernhard Spörer, Münchener Strasse 12a, D-8011 Faistenhaar, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,116
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821926
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—741 **20 Claims**



1. Assembly apparatus particularly for use in the manual assembly of components upon carrier plates comprising: means defining a working surface having removal opening means formed therethrough through which said components may be grasped by an operator; receptacle means including individual discrete receptacles located beneath said working surface and

accessible to an operator through said removal opening means; closed loop support means having said receptacle means mounted thereon for moving said receptacle means through a closed loop path in first generally parallel opposed directions relative to said working surface; guide frame means having said closed loop support means operatively associated therewith and movable relative thereto for moving said receptacle means relative to said working surface in second generally parallel opposed directions perpendicular to said first directions; said closed loop support means and said guide frame means cooperating to enable said receptacle means to be driven to selectively bring said discrete receptacles individually into operative alignment with said removal opening means to enable components contained therein to be removed by an operator.

4,274,196

ASSEMBLY TABLE FOR CONDUCTOR BOARDS

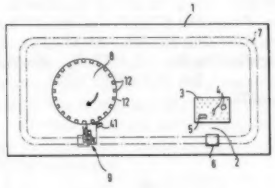
Alfred Lemmer, Machtlfingerstrasse 24, D-8000 Munchen 70, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,827

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846262

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—741 **28 Claims**



1. An assembly table for assembling conductor boards, said table comprising means forming an assembly station, a magazine in which integrated circuits are contained in a predetermined arrangement so that they may be picked up in preassigned position with integrated circuit assembly tongs and inserted into conductor boards at the assembly station, a plurality of trays having recesses formed in them to receive said integrated circuits, means for conveying said trays from said magazine to said assembly station and transfer means positioned at said magazine and movable in one direction to pick up an integrated circuit from said magazine and in another direction to place said integrated circuit into a recess in one of said trays.

4,274,197

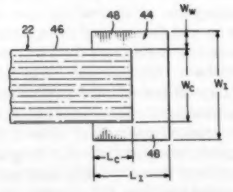
METHOD OF MAKING AN ENVIRONMENTAL SEAL

Gary C. Bethurum, El Segundo, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Sep. 21, 1979, Ser. No. 77,560

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—861 **6 Claims**



1. The method of environmentally sealing the end of a severed multiconductor cable having a first surface and a second surface and sealing joints between the conductors of such cable and electrical contacts to be placed in insulation-piercing relation with said cable, comprising the steps of: forming a blank of a soft, pliant tape having a flowable pressure-sensitive adhesive on both surfaces thereof, said blank being at least as wide as such cable and having a length at least equal to the lengths between such joints and such cable end; adhering a portion of said blank to a first surface of such cable adjacent its severed end; extending the remainder of said blank over the severed end of such cable to overlie the second surface of such cable adjacent such severed end; adhering the overlying portion of said blank to said second surface; and joining said contacts and said conductors by forcing said contacts through said blank.

4,274,198

SELF-STRIPPING ELECTRICAL TERMINAL

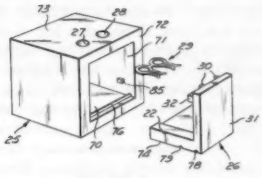
Jean-Claude A. Bouley, Dole, France, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 9, 1979, Ser. No. 10,667

Claims priority, application France, Feb. 20, 1978, 78 04786

Int. Cl.³ H01R *43/00, 11/12*

U.S. Cl. 29—866 **14 Claims**



11. A self-stripping electrical connector for making electrical connection with at least one insulated electric wire, comprising: an insulating box member defining an inner chamber; a movable member slidably received within said chamber; and terminal means mounted on said movable member and movable therewith, said terminal means comprising a forward pair of U-shaped portions and a rearward pair of U-shaped portions, the U-shaped portions of each pair being in a common plane generally parallel to the U-shaped portions of the other pair, each U-shaped portion of each pair being formed of a base and two branches extending therefrom, said branches defining an open ended slot therebetween to resiliently engage the conductor of an insulated wire, each U-shaped portion further including an opening between said branches adjacent said base and said opening being wider than said slot to receive an insulated wire inserted thereinto in a direction generally transversely of the plane of said U-shaped portion, said box including a bore in alignment with each of said openings when said movable member is in a first position and said opening is positioned for accepting the insulated wire, and said bore is aligned with a portion of the respective slot remote from said opening when said movable member is in a second position, the slots of said forward pair of U-shaped portions being in alignment with the slots of said rearward pair of U-shaped portions, and the slots of said forward pair of U-shaped portions being wider than the slots of said rearward pair of U-shaped portions so that narrow diameter wires can be inserted through the slots of said forward U-shaped portions without interference for termination with the rearward U-shaped portions.

4,274,199

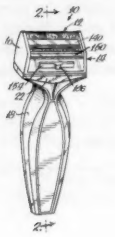
ELECTRIC SHAVER

George P. Gallanis, Des Plaines; Albert R. Spohr, Park Ridge, and Robert R. Lube, Countryside, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Division of Ser. No. 46, Feb. 2, 1979, Pat. No. 4,233,733. This application Apr. 3, 1980, Ser. No. 137,075

Int. Cl.³ B26B *19/00*

U.S. Cl. 30—34.1 **16 Claims**



1. A shaver comprising a housing, a shaving head removably mounted on said housing, a clipper assembly mounted in said shaving head, drive means mounted in said housing for driving said clipper assembly, said clipper assembly including a movable cutting blade reciprocated by said drive means and a guard assembly adjacent said blade, said guard assembly including a clipper guard slideably mounted in said shaving head for movement toward and away from said blade, a slide member slideably mounted on said shaving head, said clipper guard including an elongated, sloped slot and a cut-away portion with an inclined edge, said inclined edge including at least one indentation, said slide member including at least one spring arm having a button slideably positioned in said sloped slot and a pin mounted in said slide member and biased against said inclined edge.

4,274,200

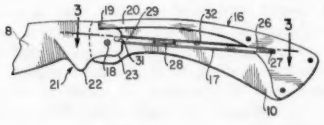
LOCK OPEN FOLDING KNIFE WITH SIDE RELEASE

James E. Coder, Bradford, Pa., assignor to W. R. Case Sons Cutlery Company, Bradford, Pa.

Filed Dec. 5, 1979, Ser. No. 100,392

Int. Cl.³ B26B *1/00*

U.S. Cl. 30—161 **2 Claims**



1. In a folding knife including a handle, a blade and blade pivot element to permit the blade to be rotated in a plane from a closed to an open position comprising

(a) a rotatable blade having a tang with a tang notch therein;

(b) a handle in turn comprising a central tumbler spring member including a base portion including a notch therein remote from the blade and a flexible blade-engageable arm; a first side frame piece on one side of the central member and a second side frame piece on the other side of the central member substantially parallel to and spaced apart from the first frame piece with both pieces being secured to the central member;

(c) a cavity within the handle defined by the spaced-apart frame pieces and the arm of central member, and further defined by the notch in the base of the central member, a first slot in the first frame piece and a second slot in the second frame piece;

(d) a flexible lock spring mounted for operable movement within said handle cavity in a plane perpendicular to the plane of rotation of the blade to lock and unlock the blade, said spring having a blade-remote end fixed in said central member base portion notch, a projection extending into the slot of second frame piece, an elbow portion of the spring accommodated by and positioned in a slot in the first frame piece during movement of the spring, and a blade-adjacent end portion releasably engageable with the blade tang.

4,274,201

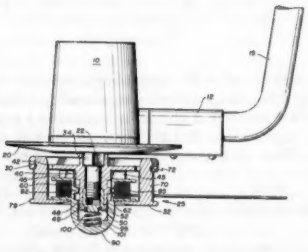
ROTARY CUTTING ASSEMBLY WITH FILAMENT FEED

Gary R. Oberg, and Robert L. McMickle, both of Spirit Lake, Iowa, assignors to Berkley and Company, Inc., Spirit Lake, Iowa

Division of Ser. No. 877,248, Feb. 13, 1978, which is a continuation of Ser. No. 733,286, Oct. 18, 1976, abandoned. This application Jan. 25, 1979, Ser. No. 6,447

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **28 Claims**



1. A rotary cutting assembly comprising, a driven member rotatable in a cutting plane about a drive axis and having a concentrically located spool storage area therein, said driven member including first and second parts positioned in spaced parallel relationship and defining the spool storage area within the driven member, means included in the first part of the driven member to couple the first part to a driven shaft defining the drive axis for the driven member, coupling means positioned on the second part to space and releasably couple the second part to the first part of the driven member, ratchet means positioned on said first part of said driven member, a spool with cutting line positioned thereon mounted over the ratchet means on said first part of driven member and having second ratchet means associated therewith to cooperate with the ratchet means on the first part, a ground engaging hub coupled to said spool and adapted to slide said spool and said ratchet means associated therewith toward said first part to allow relative rotation between said spool and said first part to unwind a predetermined amount of cutting line thereon from said spool, and bias means biasing said spool and said hub toward said second part, one end of said cutting line extending from said spool between the coupling means for rotation in the cutting plane upon rotation of the driven member and being supported in part on said coupling means.

4,274,202

PERFORATING DEVICE

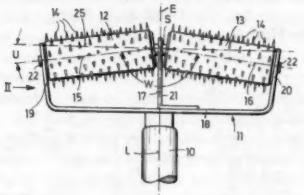
Detlef Petrick, Wermelskirchen, Fed. Rep. of Germany, assignor to Bonumwerke Tigges & Winckel GmbH & Co. KG, Velbert, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,734

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1979, 2927677

Int. Cl.[3] B26F *1/00*

U.S. Cl. 30—365 10 Claims



1. A device for perforating wallpaper to be stripped from a wall comprising an elongated handle; supporting means on said handle; a pair of elongated rollers mounted on said supporting means for free rotation about respective axes which include with one another an angle having an apex located intermediate said rollers and a plurality of spikes arranged on said rollers and projecting radially with reference to the respective axis so that, upon reciprocating movement of said device over wallpaper to be perforated said spikes will have respective components of movement lengthwise and inclined to the direction of reciprocation and thus perforate the wallpaper in form of elongated holes through which liquid may subsequently reach the rearside of the wallpaper.

4,274,203

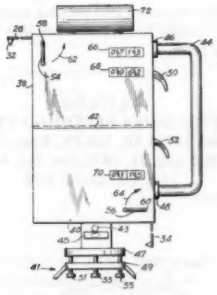
LEVEL DEVICE

Anthony J. Vasile, 68 Grandview Ave., Monsey, N.Y. 10952

Filed Sep. 24, 1979, Ser. No. 78,172

Int. Cl.[3] G01B *3/10, 11/00*

U.S. Cl. 33—1 LE 19 Claims



1. Measuring apparatus comprising a casing, a coiled measuring means within said casing and adapted for being selectively uncoiled and withdrawn from said casing and recoiled and retracted into said casing, sighting means on said casing to sight a target, said sighting means including level means for determining when said sighting means is sighting along a horizontal line, and a second coiled measuring means operatively associated with the first of said coiled measuring means and adapted for being uncoiled and recoiled in a direction generally perpendicular to that of the first said coiled measuring means, said sighting means including level means for indicating level along a line perpendicular to said horizontal line to establish a reference for said second measuring means.

4,274,204

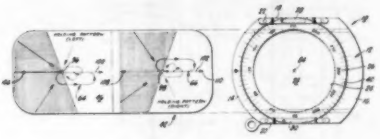
AIRCRAFT TRAFFIC PATTERN COMPUTER

Freddy R. Self, 933 Parkside Dr., Richmond, Calif. 94083

Filed Oct. 9, 1979, Ser. No. 82,951

Int. Cl.[3] G01C *21/20*

U.S. Cl. 33—1 SD 4 Claims



1. In an aircraft traffic pattern computer including a slotted frame including a window on at least one side thereof, and a compass rose having azimuth indicia adjacent said window, said compass rose being movable about a pivot, the improvement comprising:

a. a placard having at least a first surface, said placard slidably fitting within the slot of the frame such that said at least a first surface of said placard is viewable through the window of the slotted frame, said placard including means for representing at least a first and a second aircraft movement pattern each oriented in relation to reference point and at least one reference line upon said at least a first surface;

b. means for selectively aligning said first and second aircraft movement pattern reference points with the center of the compass rose, including providing the compass rose with a marking indicating the center point thereof; and

c. means for indicating at least one selected course heading for an aircraft upon selective alignment of said first and second aircraft movement pattern reference points with said marking indicating the center of the compass rose and alignment of said selected first and second aircraft movement pattern reference lines with the compass rose including at least one marking on said at least first surface of said placard indicating a particular course heading capable of being placed immediately adjacent the azimuth indicia of the compass rose.

4,274,205

MEASURING FIXTURE

James A. Starr, and James R. Punches, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

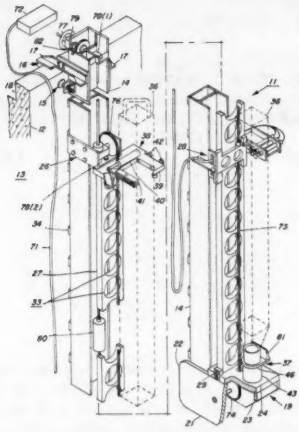
Filed Apr. 23, 1979, Ser. No. 32,112

Int. Cl.[3] G21C *17/06;* G01C *7/02*

U.S. Cl. 33—174 L 23 Claims

1. A device for measuring dimensional characteristics of an elongated component comprising: a vertically positioned elongated support beam; an elongated straight edge member supported and held in a position generally parallel to said support beam by support means at its ends secured to said support beam, the support means at one end of said straight edge providing freedom of longitudinal expansion and contraction of said straight edge and freedom from torsional constraint thereof, the support means at the other end of said straight edge providing torsional constraint whereby said straight edge is torsionally constrained only at said other of its ends; means for mounting said component in generally parallel alignment with said straight edge; a carriage mounted on said straight edge for movement along the length thereof adjacent said

component; and at least one measuring device mounted on said carriage for indicating variation of the distance between said



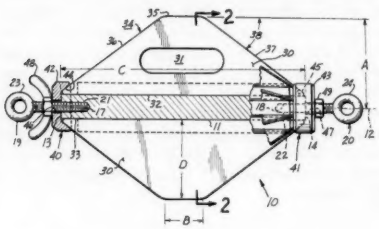
component and said carriage as said carriage is moved along said straight edge.

4,274,206

GO/NO GO PIPE DEFLECTION GAUGE

Jules Moolenaar, Santa Barbara, Calif., assignor to Phos Incorporated, Carpinteria, Calif.

Filed Jul. 16, 1979, Ser. No. 58,063
Int. Cl.³ G01B 3/34
U.S. Cl. 33—178 B **10 Claims**



1. A go/no pipe deflection gauge to be pulled through a pipe to determine whether the pipe wall has been deflected from a circular cross-section, said gauge comprising:

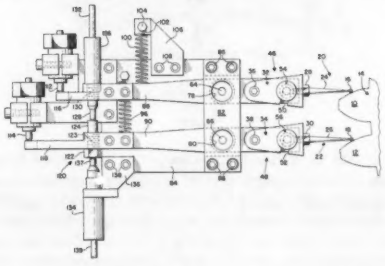
a center spindle having an axis of length and a pair of ends; cable attachment means on both of said ends to which a cable can be attached for pulling said gauge through said pipe; and a plurality of vanes extending radially from said spindle, angularly spaced from one another and parallel to said axis, each of said vanes having an outer boundary which includes a central substantially straight segment parallel to said axis, and having a pair of ends, and a pair of end segments extending from respective ends of said central segment toward said axis, said vanes being stiff and resistant to bending, and there being no occlusion between any two adjacent vanes from the spindle to the outer boundaries, said spindle having a plurality of axially extending, laterally directed slots; base portions on each of said vanes fitting closely into said slots whereby to be held in place and restrained against substantial fittings; retainer means at each end of said spindle comprising a cap having a shoulder overhanging a respective end of each of said vanes to hold said vanes in said slot, and having lateral dimensions which do not appreciably exceed those of said spindle, whereby not to appreciably occlude the region between adjacent vanes, at least one of said caps being removable to permit removal and replacement of said vanes.

4,274,207

DIFFERENTIAL CHECKING HEAD

Henry J. Flair, Franklin Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 7, 1980, Ser. No. 166,208
Int. Cl.³ G01B 5/20, 7/28
U.S. Cl. 33—179.5 R **11 Claims**



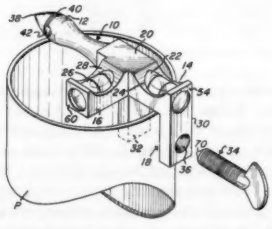
1. A contact sensor for sensing workpiece profiles comprising a frame, first and second sensing fingers which contact said workpiece profile, first and second sensing arms pivotally mounted about first and second pivot points, respectively, which support said first and second sensing fingers, respectively, a first sensor secured to said first arm and having a moveable operating means, said first pivot point for said first sensing arm being located intermediate said first sensor and said workpiece and said second pivot means being located intermediate said operating means and said workpiece, actuator means secured to said second arm so that said actuator means remains in contact with said operating means as said sensing arms undergo pivotal motion in response to the motion of said sensing fingers on the workpiece profile which allows said sensor to develop an output signal that is representative of the differential motion of said sensing fingers, and resilient return means for returning said sensing arms to an initial position when said sensing fingers are removed from contact with said workpiece profile.

4,274,208

PRECISION BENDING LEVEL

James E. Yakkel, 18576 SE. 246 Pl., Kent, Wash. 98031

Filed Aug. 31, 1979, Ser. No. 71,138
Int. Cl.³ G01C 9/28
U.S. Cl. 33—371 **9 Claims**



1. A precision bending level, comprising

(a) an elongated body aligned along a longitudinal axis hav-

ing a rear and front end, the body having at the rear end a handle with an end knob and a tapered waist forward of the knob; and forward of the handle having a shank and first level vial barrel respectively axially aligned, having mutually coplanar top, bottom, and opposite side surfaces, the level vial barrel having a level vial therein axially aligned with said shank and having an end wall at the front end of the axis and perpendicular thereto, and having a level vial viewing port in the top surface of the level vial barrel;

(b) a second level vial barrel connected to said body along a transverse axis perpendicular to the axis thereof and having top and bottom surfaces coplanar with the top and bottom surfaces of said shank and first level vial barrel, and forward and rearward side surfaces perpendicular to and joined to one of said opposite side surfaces of the shank and first level vial barrel, the second level vial barrel having a level vial axially aligned with the transverse axis, a level vial viewing portion in said top surface, and an end wall perpendicular to the transverse axis; and

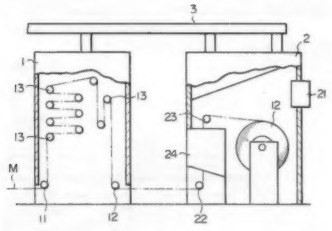
(c) an attaching fork depending from the bottom side of the body.

4,274,209

APPARATUS FOR IMPROVED AFTERTREATMENT OF TEXTILE MATERIAL BY APPLICATION OF MICROWAVES

Bunshire Kawaguchi, Kyoto, Japan, assignor to The Ichikin, Ltd., Japan

Filed Dec. 28, 1979, Ser. No. 107,790
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **4 Claims**



1. Apparatus for improved aftertreatment of textile material by application of microwaves comprising

a preparatory heating chamber arranged on the travelling path of said textile material which said textile material travels through and is provided with means for feeding steam into the interior of said chamber, and

an almost confined microwave irradiation chamber arranged on the downstream side of said preparatory heating chamber,

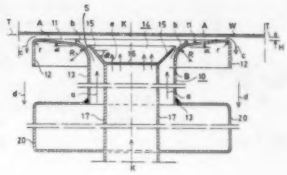
said microwave irradiation chamber being provided with means for winding up said textile material into a roll, means for rotating said roll following a programmed sequence, an applicator of said microwaves and means for feeding steam into the interior of said microwave irradiation chamber.

4,274,210

GAS NOZZLE FOR USE IN TREATING MATERIAL WEBS

Charles Stengard, Turku, Finland, assignor to Valmet Oy, Finland

Filed Sep. 11, 1979, Ser. No. 74,558
Claims priority, application Finland, Sep. 11, 1978, 782774
Int. Cl.³ F26B *13/20*
U.S. Cl. 34—156 **10 Claims**



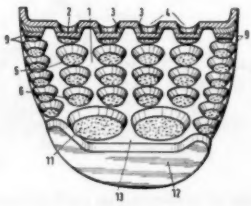
1. A nozzle for use in connection with web treatment apparatus whereby a gaseous medium is directed into contiguity with the web and wherein the web is supported without contact for treatment, comprising: a carrying surface extending substantially parallel to the web; guide members defining an annular slit located in a central region of said carrying surface so that said carrying surface surrounds said annular slit, said guide members being formed such that gaseous medium flowing therethrough will flow in substantial contiguity with said carrying surface in a substantially radial flow field relative to said annular slit and in a direction substantially parallel to the web; and means for directing the flow of gaseous medium into the nozzle, whereby the gaseous medium exits from said annular nozzle slit and flows in substantially contiguity with said carrying surface in a substantially radial flow field relative to said annular slit and in a direction substantially parallel to the web.

4,274,211

SHOE SOLES WITH NON-SLIP PROFILE

Herbert Funck, Am Wasserbogen 43, 8032 Gräfelfing-Lochham, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 25,448
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813958
Int. Cl.³ A43B *13/12, 13/18, 13/20*; A43C *15/00*
U.S. Cl. 36—30 R **9 Claims**

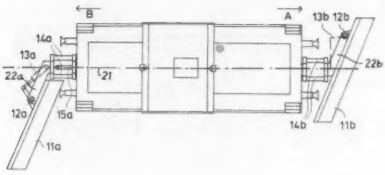


1. Shoe soles made of flexible rubber material with non-slip profiling on the wearing side, comprising: at least a section of the shoe sole which covers the ball of the foot having two largely flat sole layers of soft flexible deformable sole material, said sole layers having holes of a preset shape and size and which remain open, layer elements of a bottom layer of the sole being directed towards said holes in the top layer of the sole, layer elements of both layers of the sole being connected integrally on all sides by sloping wall sections limiting the holes, both of said sole layers providing resilience to the sole, parts forming the lower layer with holes being relatively wide.

4,274,212
FLOW APPARATUS FOR WORK VEHICLES

Matti Kurkela, Tampere; Leo Lahtinen, Jyväskylä, and Raimo Ylivakeri, Pirkkala, all of Finland, assignors to Valmet, Finland

Filed Oct. 16, 1979, Ser. No. 85,296
Claims priority, application Finland, Oct. 19, 1978, 783192
Int. Cl.[3] E01H *8/04;* E02F *5/22*
U.S. Cl. 37—29 7 Claims



1. In combination with a work vehicle such, for example, as a work vehicle which travels on rails, said work vehicle having first and second ends constituting front and rear ends depending on the direction of movement of the vehicle and a centerline extending in the direction of movement thereof, a plow assembly comprising:

at least one plow plate;

means for pivotally mounting said at least one plow plate on one of said first and second ends of said vehicle so that said plow plate is pivotable through an angle of about 180° between a front plowing position in the track of the vehicle and a slide plowing position on the side of the vehicle about a vertical axis which is laterally offset to one side of said vehicle center-line; and

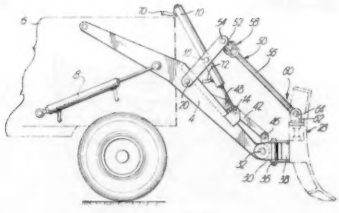
means for pivoting said at least one plow plate,

whereby as the driving direction of the vehicle is changed, said plow plate can be pivoted from the front plowing position to the slide plowing position and vice versa.

4,274,213
SCRAPER BLADE MOUNTING ASSEMBLY

Gene Yadlowsky, La Corey, Alberta, Canada

Filed Sep. 24, 1979, Ser. No. 78,501
Claims priority, application Canada, Oct. 2, 1978, 312454
Int. Cl.[3] E02F *3/76*
U.S. Cl. 37—117.5 1 Claim



1. Apparatus for converting an earth or snow moving machine having a forwardly mounted bucket pivotable about a horizontal axis to a machine having a scraper or dozer blade pivotally mounted about a vertical axis, and wherein the machine having the forwardly mounted bucket is of the type having a pair of parallel forwardly projecting boom arms having forward ends separately pivotally secured to the bucket for movement of the bucket about a horizontal axis, and a pair of first hydraulic cylinder-pistons to control the positioning of the boom arms and elevation of the bucket, and one of a pair of second hydraulic cylinder-pistons carried by each boom arm to control positioning of the bucket with respect to a horizontal axis, the piston of each second hydraulic cylinder-piston being pivotally secured to its respective boom arm and the cylinder of each second hydraulic cylinder-piston being pivotally secured to an upstanding link arm, the lower end of each link arm being pivotally secured to its respective boom arm and the upper end of each link arm being pivotally secured to one of a pair of link rods which extend forwardly for separate pivotal securement to the bucket, and control valve means for effecting movement of the second cylinder-pistons,

the conversion apparatus comprising

a first cross-member for extending between and for pivotal securement to the forward ends of the boom arms and which first cross-member has a centrally positioned forwardly extending bracket,

and a scraper blade pivotally secured to the said bracket enabling movement of the blade about a vertical axis,

and a stabilizing link having a first end secured to the first cross-member and having a second end secured to a second cross-member which extends between and is fixedly secured to the boom axis at a distance rearwardly from the first cross-member, the stabilizing link maintaining the first cross-member in set angular relationship with respect to the boom arms,

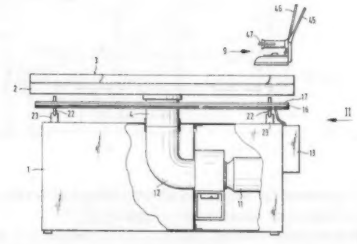
and a pair of centrally articulated link members having forward ends separately pivotally secured to the scraper blade and rearward ends pivotally secured to the upper ends of their respective link arms,

the connections between the second cylinder-pistons and the control valve being reversed enabling angling of the scraper blade about a vertical axis.

4,274,214
IRONING TABLE

Georg Haüser, Munich, Fed. Rep. of Germany, assignor to J. Strobel & Sohne GmbH & Co., Munich, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,441
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744507
Int. Cl.[3] D06F *69/00*
U.S. Cl. 38—1 C 16 Claims

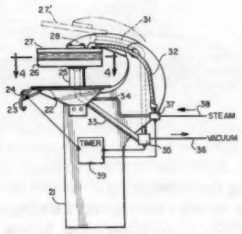


1. An ironing table comprising an ironing surface and a fan for applying suction or blowing air over the ironing surface and a switch to be actuated by an operator for electrically controlling the fan characterized in that the switch is a capacitive proximity switch having a first capacitor element in the form of a rod which extends in front of the ironing table below the ironing surface and is shaped to match the outline of the ironing surface, and a second shield shaped capacitor element of substantially semi-cylindrical cross-section is disposed between the ironing table and the first capacitor element.

4,274,215
METHOD OF SMOOTHING FLAT GOODS

Don L. Pertl, Columbia, S.C., assignor to Western Automation Corporation, Redmond, Wash.

Filed Jan. 9, 1979, Ser. No. 2,093
Int. Cl.[3] D06F *71/34*
U.S. Cl. 38—144 3 Claims

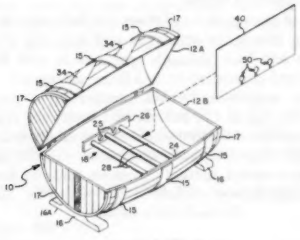


1. A method of smoothing flat goods comprising fabrics having no-iron characteristics consisting of the steps of first laundering said fabrics, thereafter disposing of said fabrics in a stack of layers of substantially uniform dimensions widthwise and lengthwise, the layers being superimposed upon one another to form a stack of multiple layers numbering 130 or less, thereafter subjecting said stack of layers to mechanical pressure between upper and lower platens, supplying a first flow of fresh steam to one of said platens and simultaneously applying suction to the other of said platens, thereby causing said first flow of the steam to flow through the entire stack in one direction for a predetermined time period while maintaining said mechanical pressure thereon, and subsequently supplying a second flow of fresh steam to said other platen and simultaneously applying suction to said one platen causing said second flow of the steam to flow through the entire stack in the opposite direction for a second predetermined time period while maintaining said mechanical pressure thereon, and thereafter releasing said mechanical pressure.

4,274,216
WINE LIST DISPLAY CONTAINER APPARATUS

Ron V. Boyd, 1318 Montegut St., New Orleans, La. 70117

Filed Feb. 4, 1980, Ser. No. 118,442
Int. Cl.[3] G09F *19/00*
U.S. Cl. 40—306 1 Claim

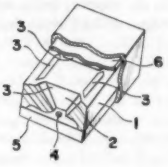


1. A wine list display container comprising:
a. a horizontal barrel having a horizontal division cut therethrough providing bisymmetrical upper lid and lower base portions, having coinciding mating face portions;
b. hinge means for connecting said upper lid and lower base portions, said lid being movable between closed and open positions;
c. base feet means on said base for securely supporting said horizontal barrel on a flat surface, such as a dinner table;
d. inner rack means within said barrel for supporting a plurality of substantially equal sized information cards; and
e. a plurality of equally sized information cards temporarily and removably attachable to said rack within said barrel, said cards and said rack being contained within said barrel when said lid assumes a closed position with said face portions mating.

4,274,217
DISPLAY DEVICE

Masauki Ohshima, Tottori, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi and Tottori Sanyo Electric Co., Ltd., Tottori, both of, Japan

Filed Jul. 25, 1979, Ser. No. 60,627
Claims priority, application Japan, Jul. 25, 1978, 53-102858[U]; Oct. 30, 1978, 53-134888
Int. Cl.[3] G09F *3/04*
U.S. Cl. 40—451 15 Claims

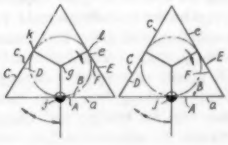


1. A display device which comprises
at least one light emitting diode supported on supporting means,
means for supporting electric power to the light emitting diode,
light reflecting block means supported on the supporting means and having at least one light path defined by wall members surrounding the light emitting diode for reflecting the light emitted therefrom, said light path being provided with an elongated opening for forming a display segment opposed to the light emitting diode,
first composite lens means having a plurality of juxtaposed lens columns, positioned above the light reflecting block means to cover the elongated opening, and
second composite lens means having a Fresnel lens portion positioned relative to the first composite lens means, whereby the light emitted from the electrically activated light emitting diode is passed through the light path, the first composite lens means and the second composite lens means.

4,274,218
DISPLAY DEVICES

Brian F. Harvey, Liverpool, England, assignor to Colin Robert Alty, Lancashire, England

Filed Aug. 20, 1979, Ser. No. 68,105
Int. Cl.[3] G09F *11/06*
U.S. Cl. 40—505 4 Claims



1. A display device comprising a plurality of rotary carriers mounted for rotation about respective axes which are parallel

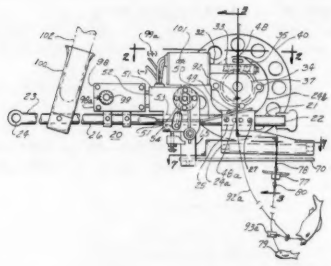
to each other, each of said carriers having mounted thereon, for rotation about respective second axes which are parallel to and equiangularly spaced about the said axis of rotation of the carrier, three supports each carrying means providing two elongate display faces which are disposed back to back and whose respective lengthwise axes are substantially coincident with the said second axis of rotation of the support, the arrangement of the carriers and supports being such that each display face on each carrier is capable of forming with a display face on each of the other carriers a substantially continuous display surface, motor means connected to rotate the carriers in rotational steps of 120° in unison to move each support on the carrier in turn into a position in which a display face thereof is in a display position, means associated with each carrier for rotating the support which is being moved out of said display position through 180° about said second axis during that 120° rotational step of the carrier, and means for oscillating each of the other two supports rotationally to and fro about their respective second axes during such 120° rotational step for providing a clearance between the longitudinal edges of the display faces on the support being rotated through 180° and the longitudinal edges of the display faces on the other two supports.

4,274,219

AUTOMATIC POWER FISHING REEL

Merton B. Way, 5300 John R. Rd., Troy, Mich. 48098

Filed Aug. 3, 1978, Ser. No. 930,817
Int. Cl.³ A01K *87/04*
U.S. Cl. 43—27.2 **3 Claims**



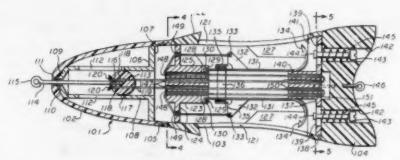
1. In trolling tackle, the combination comprising a fishing line, a sinker, a sinker release device connecting said sinker to said fishing line, a sinker line secured to the sinker for retrieving the sinker when it is released from the fishing line by said release device, a cantilevered pole having a free extremity, means for securing the end of the pole opposite said free extremity to a boat, reel means including a reel for the sinker line, power means for operating said sinker reel, means to secure the reel in an operative position on said pole adjacent the free extremity thereof, means to support a fishing pole for said fishing line inluding a fishing line guide member mounted adjacent said sinker reel for holding said fishing line in a selected position relative to said sinker line, means associated with said fishing line and sinker line for regulating the depth of said sinker, and means responsive to said fishing line for automatically de-energizing said depth regulating means when the sinker is lowered to a selected depth.

4,274,220

FISHING LURE

Thurmond J. Rogers, Jr., 7245 Fairbanks N., Houston, Tex. 77040

Filed Aug. 1, 1979, Ser. No. 62,721
Int. Cl.³ C10L *11/08*
U.S. Cl. 43—35 **1 Claim**



1. A fishing lure comprising
a lure body having a leading end, a trailing end, and a peripheral surface or periphery, and having a longitudinally extending cavity therein and a plurality of longitudinally extending slots equally spaced around the periphery thereof and opening into said cavity,
a first fixed member positioned in said cavity toward said leading end of said lure body and including pivotal hook-supporting means
a plurality of hooks having hook ends and pivot ends,
said hooks each having lever abutments thereon and being pivotally supported on said fixed member hook-supporting means and guided in said slots between a retracted position within said lure body at the trailing end thereof and an extended position with said hook ends extending substantially outside said lure body,
elastically operated means comprising an elastic band surrounding said hooks and biasing said hooks toward said retracted position,
said elastically operated means including a ball shaped supporting member supported and guided for longitudinal movement in said cavity and operable upon movement in one direction to effect movement of said hooks to said extended position and upon movement in another direction to permit said hooks to move to said retracted position,
a second fixed member positioned in said cavity at the leading end of said lure body and being of tubular construction and having said ball-shaped member guided for longitudinal movement therein
a third fixed member at the trailing end portion of said cavity,
said first and third fixed members having a plurality of aligned apertures therein,
a plurality of lines connected from said ball-shaped member extending through apertures in said first and third fixed members and back through apertures in said first fixed member and connected to said lever abutments
fishing lure supporting means comprising a rod-shaped member having an eye outside said cavity for connection to a fishing line and extending into said cavity and secured in said ball-shaped supporting member for effecting longitudinal movement thereof to move said hooks to said extended position when said lure is pulled by a fish.

4,274,221

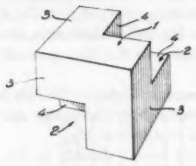
TOY BUILDING BLOCK

Gilles Boutet, 5127 Royale Ave., Boischatel, Canada (GOA 1HO)

Filed Dec. 13, 1979, Ser. No. 103,054
Int. Cl.³ A63H *33/06*
U.S. Cl. 46—25 **1 Claim**

1. A set of toy building blocks, each block of the set being identical as to size and shape, each block consisting of a single piece in the shape of a cube having two cubic shaped recesses

located in two diagonally opposite corners of said block respectively, the remaining six corners of said cube being free of any such recess, each recess having three square faces each



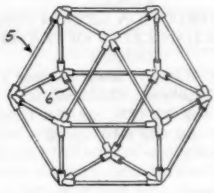
parallel to a side of said cube, said faces being equal in dimension and devoid of connecting means, and wherein said dimension is one-half the length of a side of said block, each of said faces and sides being uninterruptedly planar.

4,274,222

CONSTRUCTION ELEMENT AND THROWING TOY MADE THEREFROM

David C. Zahn, and Anci B. Slovak, both of R.F.D. #1, Box 177, East Calais, Vt. 05650

Filed Apr. 13, 1979, Ser. No. 29,727
Int. Cl.³ A63H *33/10*
U.S. Cl. 46—29 **17 Claims**



1. A flexible joint comprising:
first and second lengths of flexible material each comprising means therein for defining a respective transverse opening therethrough capable of accommodating the passage of the other length of material,
both of said opening defining means including elastic sidewall means for compressively surrounding said other length of material in its respective opening, and
one of said lengths having said other length of material held in its respective opening with both of said openings cooperating such that the outer elastic sidewall means compressively collapses the inner elastic sidewall means to form a generally cruciform flexible joint.

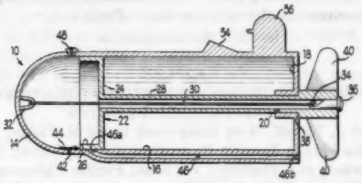
4,274,223

WATER TOY

Howard J. Morrison, Deerfield, and Harry Disko, South Barrington, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,821
Int. Cl.³ A63H *23/06*
U.S. Cl. 46—95 **21 Claims**

1. A water toy propelled by a jet of water, comprising:
an elongated body portion having an externally opening outlet nozzle;
an internal cylinder in said body, communicating with said nozzle for containing a variable volume of water;
a piston slideably disposed in said cylinder and means in said body for biasing said piston in one direction to decrease the volume of water by discharging a stream of water from said nozzle;
said biasing means including an elongated stretchable bias element secured at one end to said cylinder and at an opposite end to an elongated stem on said piston, said stem including a hollow tube in coaxial alignment with a longitudinal axis of said cylinder and said bias element extending inside said tube; and



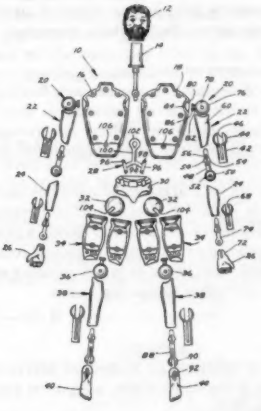
valve means in said body permitting the filling of said cylinder with water when said piston is moved in an opposite direction.

4,274,224

TOY FIGURE HAVING MOVABLE LIMB MEMBERS

William A. G. Pugh, Anstey; Robert I. Edmunds, Barwell; Peter B. Mansell, Hinckley; Robert Brechin, Thringstone, and Hubert A. Langton, Leicester, all of England, assignors to CPG Products Corp., Minneapolis, Minn.

Filed Nov. 17, 1978, Ser. No. 961,450
Claims priority, application United Kingdom, Nov. 21, 1977, 48465/77
Int. Cl.³ A63H *3/20, 3/46*
U.S. Cl. 46—161 **16 Claims**



1. An articulated toy figure having a torso and at least one limb member connected to said torso for movement relative thereto, a skeletal structure for said limb member, said skeletal structure comprising first and second elements, said first element including an elongate tubular member having first and second ends, a first jointing portion formed at a first end thereof, said first jointing portion including a slot whose general plane is parallel to the length of said first element, for the rotatable reception of another jointing portion in the form of a tongue, said first jointing portion being substantially ball-shaped with a diametric slot, said second element including an elongate member a first end of which is insertable into the second end of the tubular member, said elongate member being axially rotatable relative to said tubular member, means for preventing said second element from being withdrawable relative to said tubular member, and a second jointing portion being formed at the second end of said second element, said

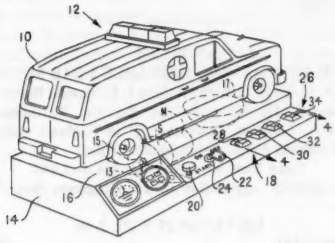
second jointing portion on said second element being a tongue whose general plane is parallel to the length of the element, for rotatable reception in a slot of another jointing portion, said tongue being disc-shaped and having a pair of oppositely extending axial pivot pins for rotatable reception in complementary apertures in the opposite walls of said slot.

4,274,225

MODEL WITH TWO-POLE MOTOR ACTUATED SIREN AND FLASHING LIGHTS

Robert J. Knauff, West Hollywood; David R. Fisher, Rancho Palos Verdes; Kenneth D. Johnson, Carson; Darrell B. Zipp, Newhall, and Frederick W. John, Pacific Palisades, all of Calif., assignors to Revell, Incorporated, Venice, Calif.

Filed Sep. 11, 1978, Ser. No. 941,287
Int. Cl.³ A63H *33/26, 5/00*
U.S. Cl. 46—227 **4 Claims**



1. A model assembly including an electrical circuit for producing motor responsive effects, which comprises:

(a) a base,

(b) a model mounted on said base,

(c) a plurality of electrical circuit elements forming at least a part of an electrical circuit mounted in said base, said electrical circuit including at least one two-pole motor and at least one effect producing means in circuit therewith, and

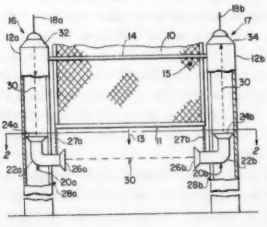
(d) a control panel for said electrical circuit on said base, said control panel including start means comprising a lever pivotally mounted on the base and having a gear segment engaging a gear on and to impart sufficient rotary motion to said motor to start its rotation and pulsating effect upon said at least one effect producing means.

4,274,226

DETECTION OF OBJECT IN PATH OF MOVING GATE

Edward N. Evans, Long Beach, Calif., assignor to Park Mobile, Inc., New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,868
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—25 **16 Claims**



1. An electromagnetic radiation detection system for detecting when an object is located in the path of a sliding gate that travels between two hollow legs, said system comprising:

a source of electromagnetic radiation, fixed with respect to a first hollow leg and in communication therewith;

a detector of electromagnetic radiation fixed with respect to a second hollow leg and in communication therewith;

a sliding gate movable in a direction generally parallel to the legs;

a first redirecting means slidable in the first leg for receiving the radiation emitted from said source and redirecting the radiation toward said second leg;

a second redirecting means slidable in the second leg for receiving the radiation from said first redirecting means and redirecting the received radiation to said detector; and

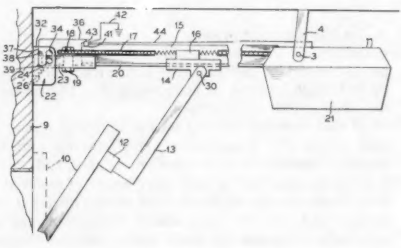
means for moving said first and second redirecting means in said first and second legs respectively upon movement of said sliding gate such that the radiation from said source is projected in a beam that travels ahead of the sliding gate when sliding.

4,274,227

OBSTRUCTION SENSOR FOR ELECTRO-MECHANICALLY OPERATED GARAGE DOORS

Robert B. Toenjes, Waverly, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Aug. 30, 1979, Ser. No. 71,113
Int. Cl.³ E05F *15/02*
U.S. Cl. 49—28 **7 Claims**

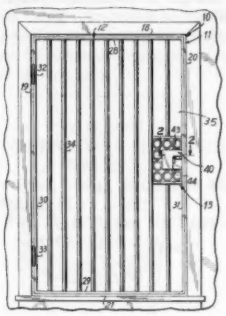


1. An obstacle reversing apparatus for a garage door operator comprising, a motor and motor control unit, support means pivotally supporting said motor and motor control unit, a longitudinal rail member with one end attached to said motor and motor control unit, a trolley connected to said door and movably mounted on said rail member, driving means mounted in said rail member for driving said trolley back and forth on said rail member and said driving means connected to said motor, a bracket means connected to the second end of said rail member to support it, a vertical slot formed in said bracket member, a transverse member attached to said second end of said rail member and receiveable in said slot of said bracket member, and a motor reversing switch connected to said motor mounted relative to said bracket and said second end of said rail member such that said reversing switch is actuated when an obstacle is encountered by said door which causes relative movement between said bracket and said rail due to the rails pivotal movement caused by the pivotal connection of said support means to said motor and motor control unit.

4,274,228
WINDOW GATE CONSTRUCTION

Witold Kondracki, New York, N.Y., assignor to Manhattan Protection, Inc., New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,568
Int. Cl.³ E06B *3/68*
U.S. Cl. 49—56 **4 Claims**



1. In an improved security gate construction including a relatively fixed rectangular frame element adapted to be secured within a window opening, a rectangular foraminous gate element hingedly supported by said frame element for relative movement, and means for selectively fixing the position of said gate element in coplanar position relative to said frame element, the improvement in said last mentioned means comprising: a box-like housing secured to a first surface of said gate element, said housing including a plurality of walls defining an enclosure, and having an opening in at least one of said walls permitting limited access to said enclosure, said opening being positioned adjacent a free edge of said gate element, and configured to prevent manual access thereto from an oppositely disposed second surface of said gate element; bolt receiving means on said frame element, an elongated bolt in said housing having a first end selectively engaging said bolt receiving means to effect a locking function; means on said housing for supporting said bolt for sliding movement, resilient means continuously urging said bolt into engagement with said bolt receiving means; a bolt handle extending laterally from said bolt adjacent a second end thereof, said handle being moved interiorly of said housing upon moving said bolt to disengaged condition with respect to said bolt receiving means.

4,274,229
FRAMES OF GRINDING MACHINES

Paul Favrot, Gagny, France, assignor to Constructions de Clichy, France

Filed Nov. 17, 1978, Ser. No. 961,681
Claims priority, application France, Nov. 22, 1977, 77 34988
Int. Cl.³ B24B *5/02, 55/02*
U.S. Cl. 51—95 WH **2 Claims**

1. A production grinding machine for finishing a workpiece, the combination of a frame defining an upper stationary table having inclined slideways which terminate at a lower front edge of the stationary table;

a carriage, means supporting the carriage on the ininclined slideways of the stationary table, and means operable to move the carriage toward and away from the front edge,

a grinding-wheel and means mounting the grinding-wheel rotatably on the carriage,

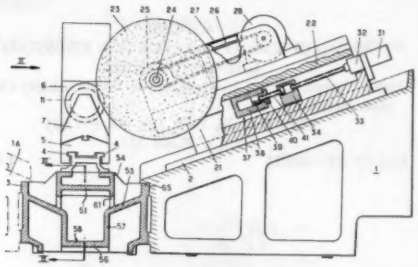
an elongated bed disposed along the front edge of the stationary table,

said bed having a medial upper portion provided with slideways, and a movable table supported to move along the bed on the slideways,

a headstock and a tailstock carried respectively on the movable table and operable for supporting the workpiece,

said bed being hollow below said slideways and having top web means extending laterally from opposite sides of the slideways and terminated at side webs, and the side webs being terminated adjacent lower interior web means operable to define an interior chute positioned to receive flow from said side webs;

the top web means being provided with opening means in communication with the chute, and said side webs defining duct means therein to establish communication from above the top webs to the chute;



the top and interior web means further being inclined, and opening means at the lower end of the chute forming an outlet, and

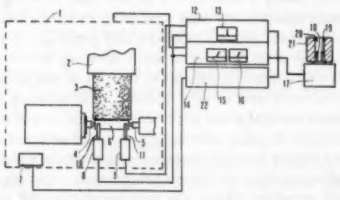
said stationary table front edge positioned in flow communication with the bed chute,

whereby free-flowing paths are defined for carrying coolant liquid applied onto the grinding-wheel and draining therefrom and off the stationary table via the outlet and away from the grinding machine.

4,274,230
APPARATUS FOR CONTROLLING A MACHINE TOOL DURING THE MACHINING OF A FIRST WORKPIECE TO BE MATCHED WITH A SECOND WORKPIECE ALREADY MACHINED

Gerhard Thalheim, Köniz, Switzerland, assignor to Sidco, SA, Geneva, Switzerland

Filed Jul. 2, 1979, Ser. No. 54,223
Claims priority, application Switzerland, Jul. 6, 1978, 7352/78
Int. Cl.³ B24B *49/04*
U.S. Cl. 51—165 R **11 Claims**



1. Apparatus for controlling a machine tool during the machining of a part of a first workpiece to be matched with a part already machined of a second workpiece, comprising:

first measuring means adapted to cooperate with said part of the first workpiece for providing a first signal and a second signal for checking respectively two dimensions on two distinct sections of said part of the first workpiece;

second measuring means adapted to cooperate with said part already machined for providing a third signal for checking a dimension of the part already machined; and

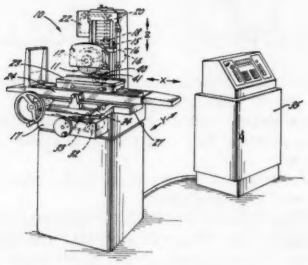
processing and control means coupled to the first and second measuring means to receive said first, second and third signal, the processing and control means being adapted to process the first and second signal for controlling and regulating the machine tool for correcting the deviations of the part of the first workpiece from a determined shape and to process the first and the third signal for controlling the machine tool for obtaining a pre-set matching between said parts.

4,274,231

METHOD AND APPARATUS FOR DRESSING A GRINDING WHEEL

James Verega, Cicero, Ill., assignor to Boyar-Schultz Corporation, Broadview, Ill.

Filed Dec. 20, 1978, Ser. No. 971,641
Int. Cl.³ B24B *53/14*
U.S. Cl. 51—165.71 **4 Claims**



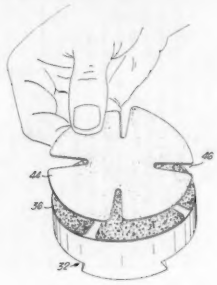
3. A grinding machine having a powerdriven grinding wheel rotatable about a generally horizontal axis which coincides with the axis of the wheel, a generally horizontal table underlying said grinding wheel and adapted to support a workpiece, a first reversible power-operated actuator for moving said grinding wheel upwardly and downwardly along a generally vertical path to establish the depth of cut of the grinding wheel into the workpiece, a second reversible power-operated actuator for moving said table transversely back and forth along a generally horizontal axis extending parallel to the axis of said grinding wheel to traverse the workpiece across the peripheral face of the grinding wheel, and two dressing wheels for dressing the peripheral face of said grinding wheel, said grinding machine being characterized in that said dressing wheels are movable transversely with said table and are mounted on said table to rotate about a common and generally horizontal axis coinciding with the axis of each dressing wheel and located below and extending parallel to the axis of said grinding wheel, the rotational axis of said dressing wheels being located in a common vertical plane with the rotational axis of said grinding wheel, said dressing wheels being located adjacent to but being spaced axially from one another with the axial spacing between the adjacent dressing wheels being greater than the axial width of said grinding wheel, the peripheral faces of said dressing wheels being of different shape and being of lesser axial width than the axial width of said grinding wheel, and power-operated means movable with said table for rotating said dressing wheels about their rotational axis whereby the peripheral face of said grinding wheel may be dressed by rotating all wheels about their respective axes, by moving said table transversely with said second actuator to traverse first one dressing wheel and then the other dressing wheel across said grinding wheel, and by moving said grinding wheel upwardly and downwardly with said first actuator to control the depth of cut of each dressing wheel into said grinding wheel.

4,274,232

FRICTION GRIP PAD

Stephen J. Wylde, Croydon, England, assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jul. 7, 1978, Ser. No. 922,785
Claims priority, application United Kingdom, Sep. 14, 1977, 38352/77; Oct. 7, 1977, 41810/77
Int. Cl.³ B24B *13/02*; B24D *17/00*
U.S. Cl. 51—358 **6 Claims**



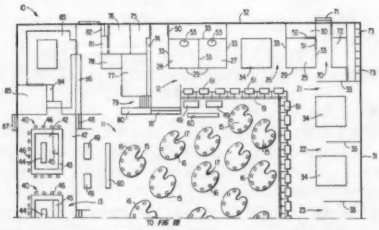
1. A tool for working on the surface of an optical lens comprising a base having a curved working surface, a base pad having an abrasive coated surface composed of a layer of binder material in which is distributed grains of hard mineral material and a mounting surface opposite said abrasive coated surface, adhesive means for bonding said base pad to said curved working surface, and a working pad laid on and conforming to the abrasive coated surface of said base pad, said working pad having a first surface means adapted for working on a lens surface and a second relatively soft surface means, opposite said first surface means, to frictionally engage with said abrasive coated surface, said abrasive coated surface being sufficiently rough to frictionally engage with said second surface means and being the sole means to retain said working pad on said tool while said tool curved surface is being urged against the surface of a lens being worked on.

4,274,233

BUILDING LAYOUT FOR RESTAURANT AND ARTIST WORK/EXHIBIT AREA

Glorys A. Currier, P.O. Box 34-1213, Coral Gables, Fla. 33134

Filed Aug. 17, 1979, Ser. No. 67,374
Int. Cl.³ E04H *3/04*
U.S. Cl. 52—33 **8 Claims**



1. A building structure which houses a restaurant with integral artist work area and exhibit area, comprising: an enclosed space defining at least one restaurant dining area having a plurality of dining tables located therein and with access from outside the building to allow dining customers to proceed to and from said dining area; an enclosed space defining a plurality of artist work areas located around the periphery of the restaurant dining area, each of said work areas having means

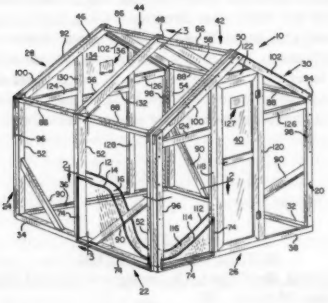
for working in a particular art medium which is separate and distinct from the art mediums in the other work areas, each of said work areas further having means for exhibiting works of art; means for communicating the dining area with the artist work areas to allow access between said dining area and said artist work areas and also to allow observation of the artist work areas by dining customers in the dining area; means for cleaning the air in said artist work area to prevent dust particles and odors from being transmitted to the dining area; at least one food preparation and serving area adjacent said dining area; and means for communicating the dining area with the preparation and serving area.

4,274,234

DOUBLE-WALL GREENHOUSE WITH FLEXIBLE FILM WALLS

Irwin R. Abell, Portland, Oreg., assignor to Hartwig-Hartoglass, Inc., Woodstock, Ill.

Filed Feb. 22, 1979, Ser. No. 14,169
Int. Cl.³ E04B *1/12*
U.S. Cl. 52—63 **12 Claims**



1. In a double-wall building structure with flexible walls, a structural member comprising:

two upright portions having lower ends for positioning along opposite sides of said structure to support sidewalls thereof;

a connecting portion extending between said upright portions opposite said lower ends to support a roof of said structure;

the structural member having an uninterrupted inner surface beginning at the lower end of one of said upright portions, extending along the lower side of said connecting portion, and continuing along the other of said upright portions to the lower end thereof;

the structural member also having an outer surface opposite said inner surface and extending along outer and upper sides of said member; and

glazing fastener means along said inner and outer surfaces for attaching said flexible walls along an unbroken line to each of the inner and outer surfaces of said member;

the structural member including at least two separable submembers joined together by lap joints;

the glazing fastener means including channel means and glazing strip means;

the channel means defining a pair of parallel channels on each of the inner and outer surfaces of the structural member, one of said channels extending along each side of said lap joint to continue said unbroken line from one submember to another;

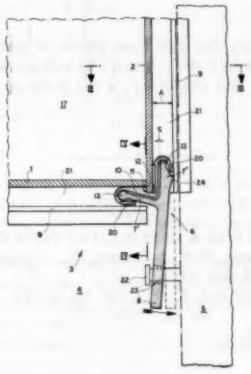
the glazing strip means including an insert flange for insertion into the channel together with a margin of said flexible walls, the insert flange having ribs such that it can be progressively inserted into said channel to stretch said flexible walls in a two-stage operation to impart tension in said inner and outer walls to rigidify said structure.

4,274,235

WINDOW-FRAME ASSEMBLY

Günter Langenhorst, Bad Sassendorf, Fed. Rep. of Germany, assignor to top-element Bauelemente für Irnenausbau & Raumgestaltung GmbH & Co. KG, Hamm, Fed. Rep. of Germany

Filed Jan. 8, 1980, Ser. No. 110,365
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900693
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—213 **10 Claims**



1. A frame assembly for mounting between a pair of generally parallel members, said assembly comprising:

four elongated frame elements each having two ends such having a longitudinally outwardly open recess, said elements being arrayed in a rectangle with two of said elements parallel to each other and lying against said members and the other two of said elements being parallel to each other and extending generally perpendicular to said members, said elements meeting at corners at said members;

respective Y-shaped corner pieces at said corners each having a pair of generally perpendicular arms received in the respective recesses and a central leg, one of said arms of each piece being elastically deflectable toward and away from the other arm of the respective piece; and

means for displacing said central legs from positions spaced from into positions closely juxtaposed with the respective members and for simultaneously elastically urging one of the members at the respective corner with the respective arm against the other member at the respective corner.

4,274,236

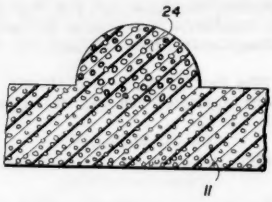
HIGH STIFFNESS CELLULAR PLASTIC SIDING

Gerald Kessler, Box 389, McClurg Rd. at Southern Blvd., Youngstown, Ohio 44512

Filed Aug. 28, 1978, Ser. No. 937,455
Int. Cl.³ E04C *1/00*
U.S. Cl. 52—309.8 **7 Claims**

1. An insulated, stiff and tear-resistant siding panel of integral and unitary extruded foam plastic construction comprising a main body portion having an upper end and a lower end and a back and a front, a hook-like flange projecting outwardly from the front of said main body portion near the upper end thereof, and a second flange projecting outwardly from the back of said main body substantially at the lower end thereof, said siding panel having a backing skin surface and a facing

skin surface, said main body portion having a thickness of about 55–85 mils, a plurality of integral crossing ribs extending from said backing surface and unitary therewith, said ribs having a thickness of about 25–65 mils, said facing surface



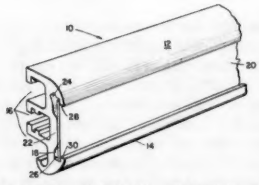
being substantially flat, said foam plastic of said main body portion being on the order of about ⅛ by volume cells, and said foam plastic of said ribs being on the order of about ½ by volume cells.

4,274,237

HOLDER FOR A DECORATIVE TRIM STRIP

Arthur A. Hagstrom, Hoffman Estates, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 3, 1979, Ser. No. 63,613
Int. Cl.³ B44F 7/00
U.S. Cl. 52—312 **3 Claims**



1. An elongated trim strip holder **10** defining a longitudinally oriented open trim channel **18** for receiving a generally flat, elongated trim strip **20**, the opening of said channel **18** being defined by parallel, opposed, first and second ledges **28**, **30** said holder **10** further defining within said trim channel **18** a pair of opposed, parallel, first and second recesses **24**, **26** spaced apart by a distance greater than the width of the trim strip **20** to be accommodated, each of said first and second recesses **24**, **26** being located adjacent and coextensive with a respective one of said first and second ledges **28**, **30**, a raised, elongated ridge **22** extending the length of said channel **18** and disposed between said first and second recesses **24**, **26**, characterized in that:

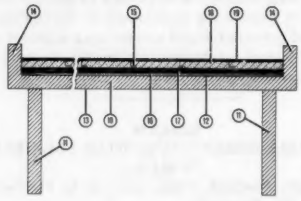
a surface of said first ledge **28** defining said first recess **24** defines a notch **36** coextensive with said first ledge **28**; a surface **40** of said notch **36** is spaced from and generally parallel to the longitudinal axis of said second recess **26**; the distance between said notch surface **40** and a wall **42** defining the second recess **26** is substantially equal to the width of the trim strip **20**; the distance between the wall of said first recess **24** and the opposite edge of said second ledge **30** is greater than the width of the trim strip **20** so that the trim strip **20** may be freely placed within said channel **18** without substantial deformation of the trim strip **20** and will be securely held in place by the notch **36** and said second recess **26** in cooperation with said ridge **22**.

4,274,238

ROOF STRUCTURE

Diarmuid O'Riordain, Condae Luimnighe, Ireland, assignor to Southern Chemicals Limited, Limerick, Ireland

Filed Aug. 23, 1978, Ser. No. 936,310
Int. Cl.³ E04B 5/00
U.S. Cl. 52—408 **8 Claims**



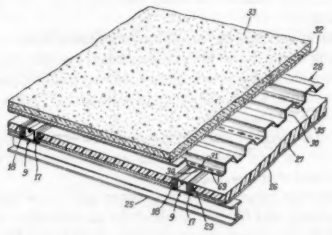
1. A flat roof structure comprising a roof deck supported in a conventional manner on a roof support means and, four discrete layers in the stated order, (i) a water impermeable layer on the upper surface of the roof deck, (ii) a drainage board adapted to allow water to pass freely therethrough in both vertical and horizontal directions, (iii) a layer of cellular thermal insulation material adapted to allow water to pass freely therethrough, and (iv) a water permeable protective and weighting layer on the upper surface of the cellular thermal insulation material adapted to allow water to pass freely therethrough and to provide weight for said roof structure.

4,274,239

BUILDING STRUCTURE

Frank E. Carroll, Barrington, Ill., assignor to Carroll Research, Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 720,353, Sep. 3, 1976, Pat. No. 4,120,131. This application Oct. 17, 1978, Ser. No. 952,057
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.³ E04B 5/52
U.S. Cl. 52—443 **24 Claims**



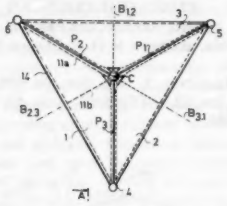
1. A sheet metal structural shape for use in building construction which is symmetrical about a bisecting plane having:

opposing generally parallel equal length sides, a flange extending outwardly at substantially 90° from one end of each of said sides, a base closure extending from the outermost end of one of said outwardly extending flanges to the outward end of the other of said outwardly extending flanges forming a closure between said parallel sides at said one end, and flanges projecting inwardly from the other end of each of said parallel sides, the terminal ends of said inwardly projecting flanges turned inwardly in continuous longitudinal abutment with each other.

4,274,240
CONCRETE FLOOR SLAB CONSTRUCTED FROM BASIC PREFABRICATED SLABS

René Soum, 2 rue Jolimont, 31500 Toulouse, France

Filed May 3, 1979, Ser. No. 35,620
Claims priority, application France, Jul. 18, 1978, 78 21636
Int. Cl.³ E04C *1/24*
U.S. Cl. 52—583 4 Claims



1. A concrete floor slab adapted to be supported on pillars or the like comprising:

(a) at least three basic prefabricated concrete slabs having triangular shapes and arranged around and encircling a central point,

(b) said basic slabs being arranged such that adjacent sides of adjacent basic slabs lie along lines converging at said central point,

(c) each of said basic slabs having an apex coinciding with said central point and two apices supported on pillars,

(d) at least three anchoring members arranged adjacent said central point, each of said anchoring members being at least partially embedded in one of said basic slabs in such a manner as to be anchored in the concrete of the respective basic slab,

(e) a central joining unit situated at said central point between said basic slabs,

(f) means for connecting each of said anchoring members to said central joining unit,

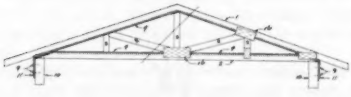
(g) said anchoring members and said connecting means being arranged symmetrically for each slab about a line bisecting the angle between the adjacent sides of each slab for distributing forces on said basic slab about the line of symmetry,

(h) each of said anchoring members including reinforcement means extending into adjacent sides of the corresponding basic slab symmetrically about said line for distributing forces exerted on said anchoring means to said basic slab.

4,274,241
METAL REINFORCED WOOD TRUSS AND TIE MEANS

S. Walter Lindal, 1120-Eighth Ave., #1702, Seattle, Wash. 98101

Filed May 4, 1979, Ser. No. 24,113
Int. Cl.³ E04C *3/292, 3/18*
U.S. Cl. 52—642 3 Claims

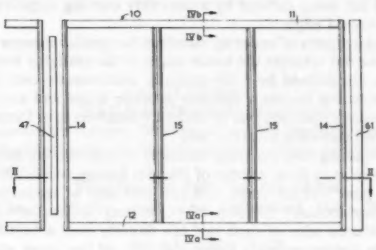


1. A webbed wood truss whose chords are reinforced by chord length strips of sheet metal attached to the chords by integral nail-like teeth punched out of the surface of the metal and pressed into the wood; said steel strips also serve as connector plates to hold the truss together.

4,274,242
BUILDING SYSTEMS

Derek Linton, and John M. Boydell, both of Wolverhampton, England, assignors to Pauling and Company Limited, London, England

Continuation of Ser. No. 759,514, Jan. 14, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,874
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—741 10 Claims



1. A method of constructing in situ a building structure having a plurality of building frame wall units disposed upon a supporting base foundation, said method comprising the steps of:

(a) juxtaposing a plurality of elongate sub-frame sections to define a horizontal skeletal base sub-frame,

(b) releasably fastening adjacent sub-frame sections together externally of the sub-frame,

(c) releasably fastening a plurality of separate individual base plate means to said sub-frame sections,

(d) connecting tie rods between at least some of the base plate means to brace the sub-frame sections of the base sub-frame,

(e) leveling and trueing the sub-frame to fix all the base plate means in precise predetermined final positions with respect to each other before casting, then

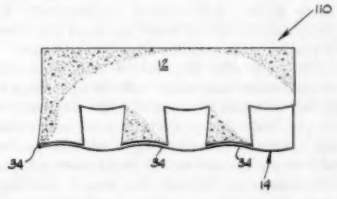
(f) casting a molded floor slab of rigid hard-setting molding material within said sub-frame to fix said base plate means and tie rods into said floor slab; and

(g) removing said sub-frame sections so that the base sub-frame is dismantled and the base plate means and tie rods remain fixed into the floor slab to provide the supporting base foundation of the building structure.

4,274,243
ASPHALT SHINGLE FOR SIMULATING A TILED ROOF

Raymond L. Corbin, Littleton, and Robert F. Reinhart, Aurora, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Dec. 18, 1978, Ser. No. 970,720
Int. Cl.³ E04D *5/10*
U.S. Cl. 52—748 8 Claims



1. A method of forming a laminated roofing shingle comprising:

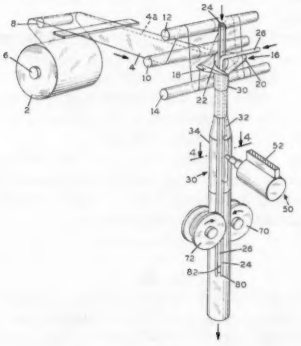
(a) providing an indefinite length of asphalt-impregnated, felted material;
(b) adhering a coating of mineral granules to at least one surface of said felted material;
(c) cutting said material in a repeating pattern along the longitudinal dimension of said material so as to form an interleaved series of tabs of pairs of overlay members, each said tab, defined by said step of cutting, being of substantially identical shape and the lower edge of each said tab being defined by a smoothly curving negatively contoured edge;
(d) making pairs of underlay members in a similar manner as above but wherein the lower edges of the underlay members are defined by a substantially continuously curving sinuous cut having a uniform periodic shape and amplitude such that each pair of underlay members thus formed are substantially identical; and
(e) laminating said underlay members to said overlay members so as to form a series of shingles having substantially the same overall shape, wherein said step of laminating further includes the step of positioning said negatively contoured edge of each said tab directly over a substantially correspondingly curving portion of the lower edge of each said underlay member so as to simulate a series of alternating ridges and valleys of a portion of a tile covered roof.

4,274,244

METHOD AND APPARATUS FOR SEALING POLYESTER FILM IN MINE BOLT CAPSULE

Peter T. Gilbert, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 18, 1979, Ser. No. 40,217
Int. Cl.³ B65B *9/12*
U.S. Cl. 53—451 **7 Claims**



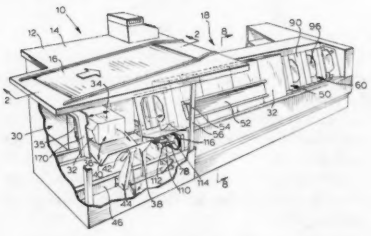
1. A method for making a tubular container having an inner, smaller tubular container extending longitudinally from film sheet material comprising the steps of:
(a) feeding said film sheet material longitudinally;
(b) while feeding said material longitudinally folding one edge of said film sheet onto said sheet and forming a two ply portion with said one edge and said fold;
(c) forming the film sheet into a tube by overlapping the unfolded other sheet edge with the open edge of said two ply fold with said overlapped edges staggered so that said two ply fold edge projects beyond said unfolded sheet edge when said film sheet is formed into a tube and with said two ply portion within said formed tube;
(d) advancing said formed tube over a shaping body and passing the overlapped edges of said formed tube between an anvil and a pair of parallel ultrasonically energized styluses and heating and fusing said edges so that one stylus heats and fuses said two ply fold projecting edge and the other stylus heats and fuses said unfolded sheet edge to the film sheet material underlying said unfolded sheet edge, and
(e) with said edges fused, filling the tube formed by the two ply portion, within the formed tube, with a curing agent and the formed tube with a resin.

4,274,245

CHECKOUT COUNTER

Marinus J. M. Langen, Rexdale, and Edgar H. Strauss, Toronto, both of Canada, assignors to H. J. Langen & Sons Ltd., Rexdale, Canada

Filed Nov. 7, 1978, Ser. No. 958,429
Int. Cl.³ B65B *5/02, 5/08, 67/02*
U.S. Cl. 53—558 **17 Claims**



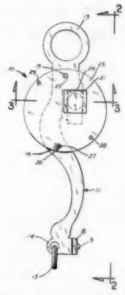
1. A checkout counter comprising,
(a) a housing having a compartment formed therein, a counter top formed on the housing, a bagging station opening outwardly from the housing and a transfer passage extending from said compartment to said bagging station,
(b) a bag-making machine in said compartment adapted to make a self-supporting open bag within said compartment,
(c) transfer means arranged to engage an open bag located within said compartment and transfer it in the open configuration from said compartment through said transfer passage into said bagging station in an upright upwardly open self-supporting configuration.

4,274,246

UNIVERSAL BIT APPARATUS

William M. Stewart, 6620 NW. 61st St., Ocala, Fla. 32670

Filed Mar. 17, 1980, Ser. No. 130,740
Int. Cl.³ B68B *1/04, 1/06*
U.S. Cl. 54—6 R **9 Claims**



1. An interchangeable mouthpiece bit for use with horses or the like comprising:
a pair of spaced apart shank members adapted at one end thereof for connection to a means for attachment to one

portion of a horse's head and adapted at the other end thereof for connection to reins;

mouthpiece means attached to an intermediate portion of each of said shank members for insertion into the mouth of a horse; and

connection means for selectively detaching and re-attaching said mouthpiece to said shank members whereby one pair of shank members can be used with a plurality of different mouthpiece means, said connection means comprising:

a post means rigidly attached at one end thereof to one of an intermediate portion of each of said shank members and said mouthpiece means;

post receiving means connected to the other of said intermediate portion of each of said shank members and said mouthpiece means for being slideable onto said post means and extending around said post means far enough to allow only said slideable movement between said post means and said post receiving means when said post receiving means is disposed on said post means; and

locking means attached to one of an intermediate portion of said shank members and said mouthpiece means for selectively preventing said slideable movement between said post means and said post receiving means.

4,274,247

WINDROW-FORMING HARVESTER

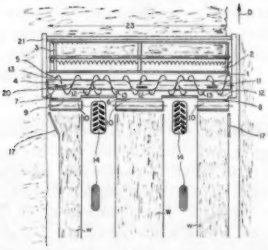
Gerhard Schmidt, Kirschau; Christian Noack, Guttau; Klaus Ulrich, Neustadt; Volker Hänel, Neustadt; Bernd Kretschmar, Neustadt; Hans-Jochen Kloth, Uhyst A.T.; Wolfgang Pietsch, Neustadt; Peter Hesche, Bad Schandau; Theodor Eistert, Neustadt; Klaus Oliva, Langburkersdorf, and Manfred Kreidler, Sebnitz, all of German Democratic Rep., assignors to Veb Kombinat Fortschritt, Landmaschinen, Sachsen, German Democratic Rep.

Filed Oct. 10, 1978, Ser. No. 949,453

Claims priority, application German Democratic Rep., Oct. 12, 1977, 201476

Int. Cl.³ A01D *49/00*

U.S. Cl. 56—14.4 **10 Claims**



1. A harvester comprising:

a chassis;

a pair of wheels supporting said chassis on the ground for displacement in a normal travel direction and spaced apart in a direction transverse to said travel direction;

a crop cutter mounted on said chassis ahead of said wheels in said travel direction and extending transversely substantially the full width of said chassis for cutting a swath of crop having a width generally equal to the width of said chassis;

a central crop conditioner on said chassis behind said cutter in said travel direction and between said wheels in said transverse direction;

a pair of outer crop conditioners on said chassis behind said cutter in said travel direction and each outside a respective wheel in said transverse direction; and

transverse conveyor means on said chassis between said conditioners and said cutter for receiving cut crop from said cutter and conveying same in respective outer and central portions to said conditioners, whereby the cut crop can form a central windrow between said wheels, a pair of outer windrows each outside a respective wheel, and a pair of generally crop-free gaps between said windrows at said wheels.

4,274,248

HAY HARVESTING MACHINE

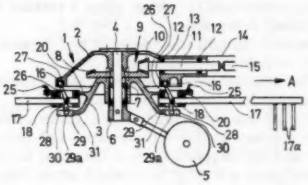
Hans-Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Nov. 16, 1979, Ser. No. 94,966

Claims priority, application Switzerland, Nov. 21, 1978, 11902/78

Int. Cl.³ A01D *79/00*

U.S. Cl. 56—370 **15 Claims**



1. A hay harvesting machine comprising:

at least one rake wheel rotatable about a substantially vertical axis;

said rake wheel comprising:

a substantially upright shaft defining said vertical axis;

a housing containing a driven rotatable housing portion;

means for rotatably mounting said rotatable housing portion upon said upright shaft;

a plurality of tine supports, each having a lengthwise axis;

each of said tine supports being selectively movable between two operating positions by rotation of the tine support about an axis extending transversely with respect to its lengthwise axis and approximately parallel with respect to the upright shaft;

a control element provided for each tine support;

hinge connection means for connecting each tine support with its control element;

control track means non-rotatably connected with said upright shaft;

each of the control elements being continuously in engagement with the control track means;

said two operating positions defining a first operating position and a second operating position;

a control connection prevailing between the control element and the related tine support in the first operating position by blocking the hinge connection means;

said control connection causing pivoting of the tine support about its lengthwise axis during its revolving motion;

in the second operating position no control connection prevailing between the control element and the tine support by releasing the hinge connection means and the tine supports being secured against pivoting about their lengthwise axis; and

said control track means extending in a plane disposed essentially perpendicular to the upright shaft.

4,274,249
HAY HARVESTING MACHINE

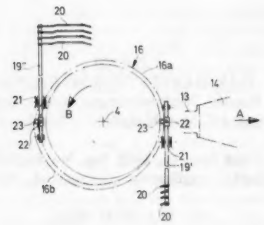
Hans-Ulrich Hauser, Niederweningen, Switzerland, assignor to Bucher-Guyer AG Maschinenfabrik, Niederweningen, Switzerland

Filed Nov. 16, 1979, Ser. No. 94,967

Claims priority, application Switzerland, Nov. 21, 1978, 11901/78

Int. Cl.³ A01D *79/00*

U.S. Cl. 56—370 **15 Claims**



1. A hay harvesting machine comprising:
at least one rake wheel revolving about a vertical axis;
said rake wheel comprising:
a substantially upright shaft defining said vertical axis;
a driven rotatable housing portion;
means for rotatably mounting said driven rotatable housing portion for rotation at said upright shaft;
a plurality of tine supports each having a lengthwise axis;
said tine supports each being provided with rake tines;
each of said tine supports being arranged at the rotatable housing portion so as to be rotatable about their lengthwise axis;
control track means non-rotatably connected with said upright shaft;
said tine supports being operatively connected with said control track means;
said tine supports being movable out of a first position where they are operatively connected with said control track means into a second position where they are uncoupled from said control track means and secured against rotation;
means for selectively arresting the tine supports in each of said positions;
said control track means extending in a plane disposed essentially perpendicular to said upright shaft;
said tine supports extending approximately in tangential direction;
pivot shaft means extending substantially transversely with respect to the lengthwise axis of the tine supports and disposed practically perpendicular to the upright shaft; and
said tine supports being pivotably mounted by said pivot shaft means at said rotatable housing portion.

4,274,250
PROCESS AND ARRANGEMENT FOR THE COVERING OF A SPINNING CARRIER WITH FIBER MATERIAL

Peter Lippmann, Gassner Feld 15, D–8212 Ubersee am Chiemsee, Fed. Rep. of Germany

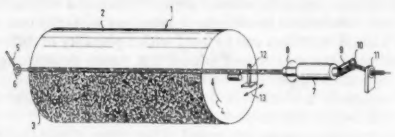
Filed Jul. 11, 1979, Ser. No. 56,621

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830669

Int. Cl.³ D02G *3/36*; D01H *1/12*

U.S. Cl. 57—5 **3 Claims**

1. In a process for the spin-covering of a spinning carrier, particularly yarn, threads or filaments, with a fiber material, particularly wool, cotton or synthetic fibers, including pulling said spinning carrier at a distance past a collector drum for the fiber material and setting said spinning carrier into rotation, said collector drum being the pickup of a carding device and the spinning carrier being pulled in an axial direction past and at a distance to the surface of a pickup supporting the fiber nap of the fiber material, the improvement comprising: imparting a so rapid rotation to said spinning carrier by a fly-frame tenter



arranged behind the pickup in the direction of movement of said spinning carrier and generating a false rotation whereby the surface speed of said spinning carrier is higher than the circumferential speed of said collector drum.

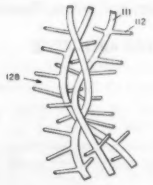
4,274,251
YARN STRUCTURE HAVING MAIN FILAMENTS AND TIE FILAMENTS

Charles W. Kim, Wilmington; Chia-Seng Liu, and Richard MacDuff, both of Newark, all of Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 896,547, Apr. 14, 1978, Pat. No. 4,186,781, which is a division of Ser. No. 750,982, Dec. 15, 1976, Pat. No. 4,101,358, which is a division of Ser. No. 590,664, Jun. 26, 1975, abandoned, which is a division of Ser. No. 324,028, Jan. 16, 1973, Pat. No. 3,922,329. This application Oct. 16, 1978, Ser. No. 951,801

Int. Cl.³ D02G *3/22*; D01D *5/42, 5/253*

U.S. Cl. 57—206 **3 Claims**



1. A yarn comprising at least one main filament uniaxially oriented along its longitudinal axis and having protruding therefrom along its length a plurality of portions of tie filaments which have no substantial portion thereof crossing over the main filament, each of said portions of tie filaments protruding from said main filament being substantially perpendicular to said main filament at the junction between each of said portions of tie filaments and said main filament and each of said portions of tie filaments having its longitudinal axis in axial alignment with the longitudinal axis of the corresponding portion of tie filament protruding from the other side of said main filament at the junction between each of said portions of tie filaments and said main filament.

4,274,252
SWIVEL LOCKING DEVICE

John L. Cavender, P.O. Box 685, Moorhead, Miss. 38761

Filed Jun. 4, 1979, Ser. No. 45,060

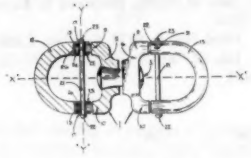
Int. Cl.³ F16G *15/08*

U.S. Cl. 59—86 **8 Claims**

1. A swivel locking device comprising two members defining a hole in each therethrough;
a means passing through said holes for joining said two members in such a manner that each member is freely rotatable about a first axis defined by the axis of the join-

ing means and with respect to each other, wherein at least one of said members includes two portions extending to form part of a loop, each of said extending portions containing a hole in proximity to the end thereof oriented such that the two holes define a second axis substantially perpendicular to the first axis of the means and an additional hole in the end of at least one extending portion perpendicular to the other hole;

a detachable loop portion having two ends that fit together with said extending portions of said member to form an unyielding closed loop, said detachable loop portion further comprising holes in proximity to the ends thereof that align with the holes of the extending portions on said second axis, and an additional hole in at least one end perpendicular to the other hole;



a rod member extending along said second axis and through all of said holes on the second axis to thereby join said extending portions of the member with said detachable loop portion, said rod member being enlarged at one end thereof, and in proximity to the opposite end having a hole therein, said hole in said rod member being alignable with said additional holes formed in proximity to at least one end of the extending portion of the member and at least one end of the detachable loop portion, said holes aligning along a third axis substantially perpendicular to the first axis and the second axis; and

a fastening means for securing the position of said rod member with respect to the extending portions and the detachable loop portion inserted through said hole in said rod and said additional aligned holes in said extending and detachable loop portions.

4,274,253

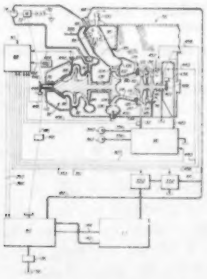
CONTROL FOR TURBINE AND RECUPERATOR INLET TEMPERATURES

Frederic E. Bolliger; Geoffrey D. Woodhouse, both of Phoenix; George B. Mattson, Scottsdale; Bruce S. Anson, Phoenix, all of Ariz., and Robert A. Hatch, Boca Raton, Fla., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,365

Int. Cl.³ F02C *9/02, 9/04*

U.S. Cl. 60—39.03 **6 Claims**



5. A gas turbine engine as set forth in claim **1**, wherein said adjusting means comprises a set of variable incidence guide vanes disposed in the path of said motive gas flow.

4,274,254

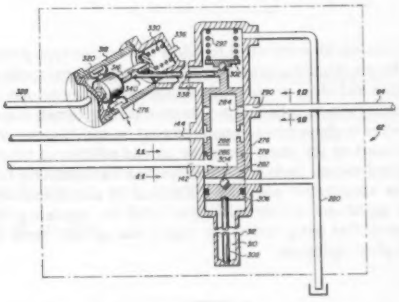
TURBINE ENGINE FUEL SCHEDULE VALVE AND METHOD

Harvey B. Jansen; Milton R. Adams, both of Tempe; Robert B. Sumegi, Phoenix, all of Ariz.; Klaus K. G. Huber, Xenia, Ohio, and John A. Salisbury, deceased, late of Phoenix, Ariz. (by Judith M. Salisbury, administratrix), assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Dec. 22, 1977, Ser. No. 863,570

Int. Cl.³ F02C *3/10, 9/04*

U.S. Cl. 60—39.03 **31 Claims**



1. A method for controlling fuel flow to the combustor of a gas generator section of a gas turbine engine receiving a supply of heated, pressurized air from a compressor, comprising the steps of:

sensing the temperature of inlet air being supplied to the combustor;

sensing the pressure maintained within said combustor;

delivering pressurized fuel flow through a pair of ducts in parallel flow arrangement to a fuel scheduling valve having a single output passage directing the pressurized fuel flow to the combustor;

metering fuel flow through one of said pair of ducts upstream of said scheduling valve in relation to an input signal whereby relatively unrestricted maximum flow is permitted through said one duct to said scheduling valve during acceleration operation, and severely restricted minimum flow is permitted through said one duct to said scheduling valve during deceleration operation of said engine;

maintaining the temperature of gas exhausting from said combustor at a substantially constant level during at least one portion of the acceleration operation by metering fuel flow through said single output passage of said scheduling valve along a first preselected, empirical schedule as a predetermined function of said sensed temperature and said sensed pressure; and

maintaining a continuous combustion process within said combustor during said deceleration operation by metering fuel flow delivered through the said other of said pair of outlet ducts in said scheduling valve along a second preselected, empirical schedule as a second predetermined function of said sensed pressure.

4,274,255

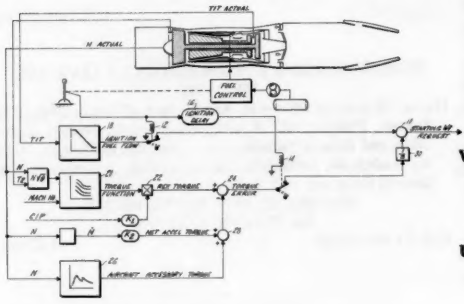
CONTROL FOR START-UP OF A GAS TURBINE ENGINE

Robert R. Pollak, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed May 7, 1979, Ser. No. 36,721

Int. Cl.³ F02C 7/26

U.S. Cl. 60—39.14 R **11 Claims**



1. A system for controlling fuel flow to a turbine type power plant for starting the engine from ignition to idle speed mode of operation including means responsive to certain engine operating parameters to schedule a reference torque signal, means responsive to the actual torque produced by said engine upon engine start-up for being compared to said referenced torque signal and means, including a fuel control for regulating fuel flow in accordance with the difference of said referenced torque signal and said actual torque signal for regulating the amount of fuel being fed to the engine during said mode of power plant operation.

4,274,256

TURBINE POWER PLANT WITH BACK PRESSURE TURBINE

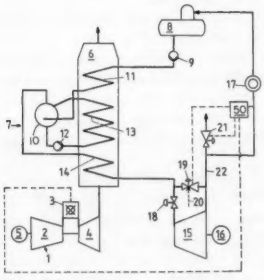
Jörg Kalt, Nussbaumen, and Rolf Kehlhofer, Dielsdorf, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 21, 1979, Ser. No. 40,722

Claims priority, application Switzerland, May 19, 1978, 5458/78

Int. Cl.³ F02C 6/18; F02G 5/02

U.S. Cl. 60—39.18 B **9 Claims**



1. A combined gas/steam turbine power plant, comprising:

a gas turbine having a combustion chamber;

steam generation means for utilizing exhaust from the gas turbine to generate steam;

a steam turbine, said steam turbine being selectively supplied with said steam from the steam generation means;

first means for utilizing the steam downstream of the steam turbine;

second means for compensating for relatively small fluctuations in back pressure of the steam upstream of the first means and downstream of the steam turbine, said second means selectively varying a delivery of fuel to the combustion chamber of the gas turbine;

third means for compensating for relatively large fluctuations in the back pressure of the steam upstream of the first means and downstream of the steam turbine, said third means selectively supplying live steam directly to the first means and selectively venting said live steam.

4,274,257

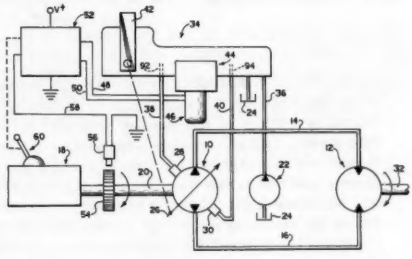
ANTI-STALL CONTROLLER

William E. Koch, Jr., Marshall, and Michael A. Klimowicz, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 8, 1979, Ser. No. 1,809

Int. Cl.³ F04B 1/26; F16D 31/02

U.S. Cl. 60—431 **9 Claims**



1. In a control system for a hydrostatic transmission of the type including a prime mover driven variable displacement pump; a fluid motor; fluid operable means for varying the displacement of the pump, the fluid operable means defining first and second fluid pressure chambers for varying the displacement of the pump in first and second opposite directions; a source of pressurized control fluid for operating the fluid operable means; supply conduit means in fluid communication with the source of control fluid, main control means operable to control the flow of control fluid from the supply conduit means to one of the first and second fluid pressure chambers through one of first and second fluid conduit means, respectively, and to control the flow of control fluid from the other of the first and second fluid chambers to a reservoir; the improvement comprising:

(a) auxiliary anti-stall override control valve means defining control conduit means operable to communicate control fluid from said one of the first and second fluid conduit means to said other of the first and second fluid conduit means;

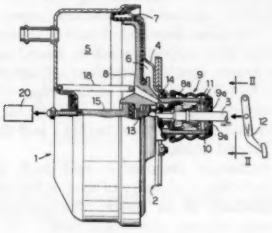
(b) said auxiliary control valve means including an on-off, electro-hydraulic valve disposed in said control conduit means to prevent fluid communication therethrough in response to an electrical input signal in one condition, and to permit fluid communication therethrough in response to an electrical input signal in another condition;

(c) control logic means operable in response to variations in an input condition to alternate said electrical input signal between said one condition and said another condition at a duty cycle determined by the deviation of said input condition from a normal operating condition, said input condition comprises the speed of operation of the prime mover, and said normal operating condition comprises a prime mover reference setting speed.

4,274,258
DUST-BOOT FOR A VACUUM BOOSTER

Akira Shirai, Toyoake, and Sigeo Nagasawa, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 7, 1978, Ser. No. 922,733
Claims priority, application Japan, Jul. 9, 1977, 52/91297[U]
Int. Cl.³ F15B *9/10*; F16J *15/18*
U.S. Cl. 60—547 R **17 Claims**



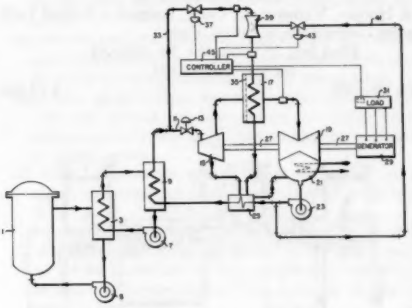
1. A dust-boot for capping to protect a sliding portion of a power piston for a vacuum booster means which sliding portion protrudes from a dash-panel into a driver's compartment of a vehicle having a forward compartment, the dash-panel separating the driver's compartment from the forward compartment and the piston delivering a pedal-depressing force after having boosted the same to a master cylinder, the dust boot comprising a main body having a major surface provided with at least one air sucking aperture therein in fluid communication with said driver's compartment, said at least one aperture having a given axis along a given air flow path; a firmly formed noise-preventing wall spaced from said main body of the dust-boot and in said driver's compartment said noise-reducing wall being spaced from said major surface, extending over said at least one air-sucking aperture in spaced relation therewith and thus defining with said major surface an air flow passage from the driver's compartment which is dissimilar in direction of air flow from that of said given air flow path of said at least one air-sucking aperture in the outgoing direction of air flow from said driver's compartment, whereby air-sucking sounds reaching the driver by a linear path are at least reduced.

4,274,259
SUPERHEATED STEAM POWER PLANT WITH STEAM TO STEAM REHEATER

George J. Silvestri, Jr., Upper Chichester, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 728,475, Sep. 30, 1976, abandoned. This application Mar. 2, 1978, Ser. No. 882,831
Int. Cl.² F01K *7/22*
U.S. Cl. 60—663 **2 Claims**

1. A power plant comprising in combination means for supplying superheated steam, a first turbine receiving said superheating steam and exhausting steam at a lower pressure and temperature, a second turbine receiving exhaust steam from said first turbine, said turbines being connected to a load, a reheater disposed between said first and second turbine to reheat the steam flowing from said first to said second turbine, said reheater utilizing superheated steam from within said power plant as the heating medium, a desuperheater disposed to desuperheat the superheated steam from within said power plant before it enters said reheater, a controller responsive to the pressure of said steam entering said desuperheater, the temperature of the steam leaving said desuperheater, the temperature of the steam entering said second turbine and said load to control said desuperheater and throttling means disposed to throttle the steam from within the power plant before it enters the desuperheater, said controller also controlling said throttling means, whereby the reheater may be operated with low

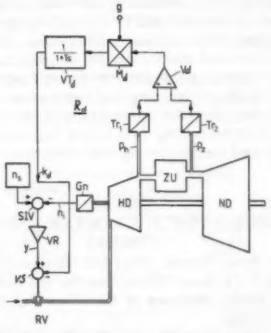


temperature gradients reducing thermal shock and extending the life of the reheater.

4,274,260
METHOD AND APPARATUS FOR REGULATING A STEAM TURBINE

Jerzy Bukajlo, Bois Colombes, France, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jan. 24, 1979, Ser. No. 6,476
Claims priority, application Switzerland, Jan. 31, 1978, 1014/78; Feb. 17, 1978, 1759/78
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—663 **5 Claims**



1. A method of regulating a steam turbine comprising at least one resuperheater arranged between a high pressure section having an impeller casing and a low pressure section having an impeller casing, comprising the steps of:

generating an actual-value signal proportional to the rotational speed of said turbine;

providing a reference-value signal;

comparing said actual-value and reference value signals to generate a first difference signal;

generating a first pressure signal proportional to the pressure in the impeller casing of said high pressure stage;

generating a second pressure signal proportional to the output pressure of said resuperheater;

producing a feedback magnitude signal proportional to the difference of said first and second pressure signals; and

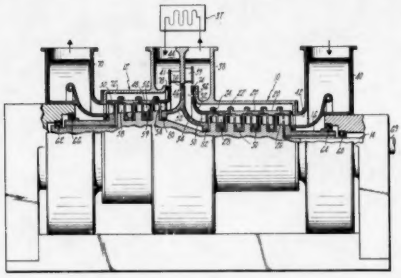
subtracting said feedback magnitude signal from said first difference signal to produce a regulating signal for regulating said turbine.

4,274,261

CLOSED CYCLE CONTRAROTATING GAS TURBINE POWER PLANT UTILIZING HELIUM AS THE WORKING MEDIUM

John J. Horgan, Wethersfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 25, 1978, Ser. No. 945,655
Int. Cl.[3] F02C 1/04
U.S. Cl. 60—682 4 Claims



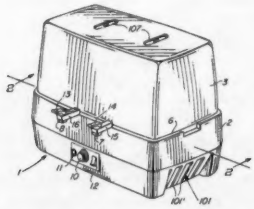
1. A self-contained power unit having an elongated enclosed casing rotatably supporting stages of axial flow compressors and turbines, said stages of compressors and turbines including alternate rows of compressor blades and alternate rows of turbine blades being in contrarotating relationship, said casing having an inlet ahead of the stages of the compressor and an outlet behind the stages of the turbine and passage means interconnecting said outlet and said inlet, helium being utilized as the working medium in said self-contained power unit, means external of said casing for adding heat to said helium, a split scroll between the said stages of said compressor and said stages of said turbine for directing the discharged helium from said compressor to a heat source and returning it to the turbine, an innershaft in said enclosed casing supporting alternate rows of said compressor blades and turbine blades of said stages of said compressor and said turbine for one direction of rotation, said casing supporting alternate rows of said compressor blades and turbine blades of said stages of compressor and turbine for an opposite direction of rotation, and said scroll means including means interconnecting said casing driven by said turbine blades with said casing driving said compressor blades.

4,274,262

THERMOELECTRIC JUG COOLER AND CONTROL CIRCUIT

Michael A. Reed, Tucson, Ariz.; Ian Hatcher, Barrie, Canada; Kingstone L. H. Reed, Barrie, Canada, and William Danchuk, Barrie, Canada, assignors to Koolatron Industries, Limited, Barrie, Canada

Filed Mar. 21, 1980, Ser. No. 132,696
Int. Cl.[3] F25B 21/02; F25D 3/08
U.S. Cl. 62—3 4 Claims



1. A thermoelectric apparatus for changing the temperature of a quantity of liquid from a first temperature to a second temperature, said thermoelectric apparatus comprising in combination:

(a) a first container for containing the quantity of liquid, said first container having a top, said first container having a major surface area;

(b) thermally conductive means for thermally contacting said first container, said thermally conductive means being shaped to minimize thermal resistance between said container and said thermally conductive means;

(c) support means for supporting said thermally conductive means, said support means having first and second walls having first and second holes therein, respectively;

(d) a removable cover disposed on said base means for cooperating with said support means to bound and thermally insulate a region in which said first container is disposed;

(e) an elongated duct disposed in said support means, said duct extending from said first opening to said second opening to allow air to pass through said duct and said first and second holes;

(f) a heat exchanger disposed in said duct, said heat exchanger including a plurality of spaced fins disposed such that substantially all air passing through said duct must pass between various ones of said fins;

(g) electric fan means disposed in said duct for forcing air to flow through said duct and said first and second holes;

(h) thermoelectric means for effecting flow of thermal energy between said heat exchanger and said thermally conductive support means to cause the temperature of the liquid to change from the first temperature to the second temperature;

(i) first circuit means responsive to the temperature of said thermally conductive means for producing a first voltage if the temperature of said thermally conductive means is greater than a first temperature and producing a second voltage if the temperature of said thermally conductive means is less than said first temperature;

(j) second circuit means responsive to said first circuit means for coupling an electric power source to said electric fan means and said thermoelectric means in response to said second voltage and decoupling said electric power source from both said thermoelectric means and said electric fan means in response to said first voltage; and

(k) third circuit means responsive to the temperature of said heat exchanger for producing an override signal if the temperature of said heat exchanger exceeds a second temperature, said second circuit means being responsive to said override signal to decouple both said thermo-electric means and said electric fan means from said electric power source if the temperature of said heat exchanger exceeds said second temperature.

4,274,263

CONTINUOUSLY REFRIGERATED, AUTOMATICALLY EJECTED BLOCK ICE MACHINE

David W. Goushaw, R.R. 1, Box 814, Sahuarita, Ariz. 85629

Division of Ser. No. 899,533, Apr. 24, 1978, Pat. No. 4,205,534.
This application Feb. 11, 1980, Ser. No. 120,551
Int. Cl.[3] F25C 5/02
U.S. Cl. 62—71 4 Claims

1. A method for the continuously refrigerated, automatically ejected making of block ice comprising the steps of:

receiving water from a water supply, said step including the steps of

measuring the volume of water received, and

generating a signal when the specific volume of water has been measured;

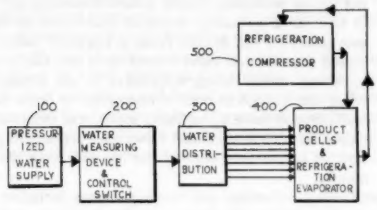
selectively distributing the water to one of a plurality of ice product cells, said step including the steps of

directing the water to the ice product cell so selected through water lines,

filling the ice product cell with water,

receiving the signal generated when the specific volume of water has been measured,

holding the water in the ice product cell,
draining away water in the water line proximate the ice product cell, and
distributing the water to a new ice product cell when the signal indicating a specific volume of water which had been measured is received;



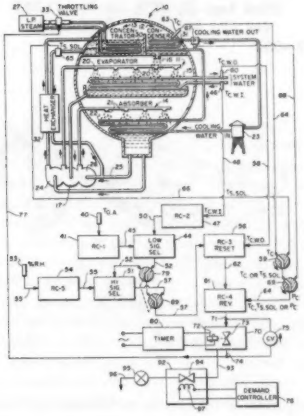
ejecting a previously formed ice block in the ice product cell so selected; and
freezing the water in the ice product cell to form a new block of ice.

4,274,264

CHILLER CONTROL

Robert W. Andres, Burnsville, Minn., assignor to Owens Service Corporation, Minneapolis, Minn.

Filed Feb. 1, 1980, Ser. No. 117,393
Int. Cl.[3] F25B *15/00, 41/00, 1/00*
U.S. Cl. 62—148 **22 Claims**



1. A control means for a refrigeration system using a refrigerant to chill a fluid medium through a closed system having a chiller and a condenser, the chiller receiving the fluid medium to be chilled and discharging the fluid medium upon being chilled, refrigeration means in communication with the chiller and condenser to provide refrigeration to chill the fluid medium in the chiller, refrigerant pump means in communication with the refrigeration means for pumping the same through the system, refrigerant capacity control means in communication with the refrigerant for controlling the refrigeration capacity of the refrigerant, and a control means operably connected to said refrigerant capacity control means for controlling the refrigeration system, said control means comprising:

(a) first temperature sensor means providing an output signal representative of the outside air temperature;

(b) first amplifier means operably connected to said first sensor means providing an amplified signal representative of the outside air temperature;

(c) second temperature sensor means providing an output signal representative of the return chilled water temperature;

(d) second amplifier means operably connected to said second sensor means providing an amplified signal representative of the returned chilled water temperature;

(e) a low signal selector means operably connected to said first and second amplifier means providing an output signal representative of the lowest amplitude of said temperature signals;

(f) third temperature sensor means providing an output signal representative of the supply chilled water temperature;

(g) a dual input settable controller operably connected to said third temperature sensor and to said low signal selector means to provide an output signal representative of the increase or decrease in amplitude from the set point of said settable controller;

(h) fourth sensor means sensing a distinct overriding condition and providing an output signal representative of said condition, said signal having an amplitude for overriding the amplitude of said other output signals;

(i) a reverse signal settable controller operably connected to said fourth sensor means and to said dual input settable controller providing a signal representative of the reverse change in amplitude from the set point of said reverse signal settable controller;

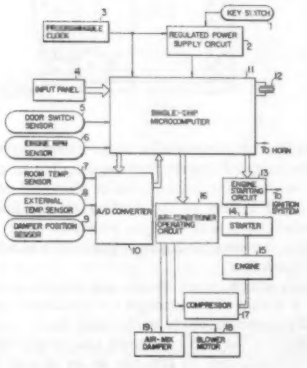
(j) and a control mechanism having an input operably connected to said reverse signal settable controller and an output operably connected to the refrigerant capacity control means, said control mechanism providing a signal representative of the capacity of said refrigeration system.

4,274,265

METHOD AND APPARATUS FOR AUTOMATICALLY OPERATING CAR-MOUNTED AIR-CONDITIONER

Shunji Okumura, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 28, 1979, Ser. No. 52,923
Claims priority, application Japan, Aug. 4, 1978, 53/95718
Int. Cl.[3] G05D *23/32;* **F25B** *19/00;* **B60H** *3/04*
U.S. Cl. 62—158 **8 Claims**



1. An apparatus for automatically air-conditioning a vehicle having an engine and an air-conditioner powered by said engine comprising:

manually operable input means for generating a first input data signal representing a desired room temperature in said vehicle and a second input data signal representing an appointed time at which said vehicle is air-conditioned;

room temperature sensor means for sensing the room tem-

perature of said vehicle to generate an output signal representing the room temperature thereof;

programmable clock means, responsive to said second input data signal, for generating a start signal when a time measured by said clock means coincides with said appointed time;

means for controlling said air-conditioner; and

a microcomputer having input terminals connected to said manually operable input means and said room temperature sensor means, an output terminal connected to said air-conditioner controlling means, and an interrupt request input terminal connected to said programmable clock means, said microcomputer being energized upon closing of a key switch of said engine for comparing the output signal of said room temperature sensor means with said first input data signal to operate said air-conditioner controlling means when a temperature difference between said room temperature and said desired room temperature exceeds a predetermined value, and said microcomputer being energized and interrupted in response to said start signal to execute an operation for comparing the output signal of said room temperature sensor means with said first input data signal to start said engine only when the temperature difference between said room temperature and said desired room temperature exceeds the predetermined value.

4,274,266

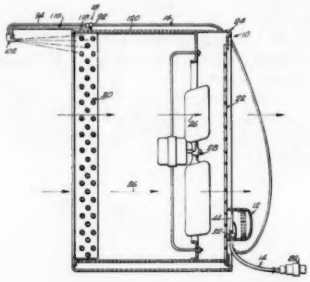
WATER COOLING SYSTEM FOR AIR COOLED AIR CONDITIONERS

Donald Shires, 1214 Normandy Dr., Miami Beach, Fla. 33141

Filed May 15, 1979, Ser. No. 39,112

Int. Cl.[3] F28D *3/00;* **B05B** *15/06*

U.S. Cl. 62—171 **13 Claims**



1. An attachment comprising a water cooling system to be mechanically mounted exteriorly on an installed air cooled air conditioner without the requirement of electrical connection to the electrical system of the existing air conditioner and which air conditioner is of the type provided with:

condenser coil means having an upper zone and a first and a second main face,

a fan means which, when the air conditioner is energized, directs a stream of air through the condenser coil means generally perpendicularly to the main faces,

a frame for the fan and condenser coil means and which frame is configured to provide an air stream inlet and outlet with the inlet having an upper zone, and

said frame including a first and second flow through grill work covering said inlet and outlet,

said water cooling system comprising:

nozzle means to direct a spray of water into the frame through the upper zone of the inlet and onto the upper zone of the condenser coil means within the frame,

water conduit means including means to connect to a pressurized water source and to said nozzle means,

normally closed valve means in said conduit means between said source and nozzle means, and

valve operating means to be mounted exteriorly of the frame and on the first grill work and at the air stream outlet, said valve operating means including a paddle with an air stream impact face to be oriented in generally parallel relation to the main faces of the frame, said valve operating means including tiltable means mounting said paddle to said valve operating means to accommodate swinging movement of the paddle from a normally valve means closed attitude to a valve means open attitude, said valve operating means being responsive to air stream forces when the air conditioner is energized to open said normally closed valve upon tilting movement from said valve closed attitude toward said valve open attitude to permit a flow of pressurized water from the source to the nozzle means,

positioning, orienting and holding means included in said nozzle means to attach said nozzle means exteriorly of the frame and to direct water into the frame through the upper zone of the inlet and onto the upper zone of the condenser coil means to trickle down the condenser coil means from the upper zone, and

attachment means to attach the valve operating means exteriorly of the frame and in the flow path and including orienting structure to orient said paddle face in generally parallel relation to the frame main faces when attached to an air conditioner.

4,274,267

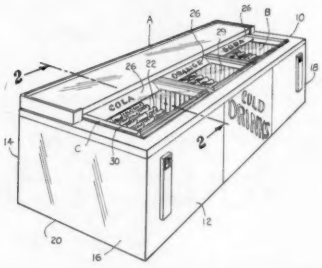
HORIZONTAL MERCHANDISING COOLER

David H. James, and Manuel F. Junco, both of Spartanburg, S.C., assignors to Tannetics, Inc., Erie, Pa.

Filed Aug. 30, 1979, Ser. No. 71,303

Int. Cl.[3] A47F *3/04;* **F25D** *11/02*

U.S. Cl. 62—252 **5 Claims**



1. A refrigerated drink box for merchandising drink packaging containers of several brands and the like comprising:

an elongated horizontal open top receptacle including elongated spaced front and back sidewalls, integral spaced end walls, and an integral bottom floor defining an interior space in said receptacle;

a plurality of compartment areas within said interior space accommodating placement of said drink packaging containers in a manner making the brand names on said drink packaging containers readily ascertainable and visible;

a plurality of transparent door closure members overlying respective compartment areas affording illumination and permitting visual inspection of the interior of said compartment areas and being manually openable and closable for access to said compartment areas, one each of said transparent closure members overlying a respective one of said compartment areas;

brand name indicia disposed beneath each said transparent door closure member enlarged and corresponding to a

single brand name of drink displayed and contained directly therebelow to define an individual compartment within said compartment area from which said single brand name of drink is merchandized;

said brand name indicia being carried by said receptacle depending downwardly beneath said transparent door closure adjacent thereto and disposed at an angle relative to said door closure and drink packaging containers in a respective compartment so as to be simultaneously visible to a person upon approaching the drink box;

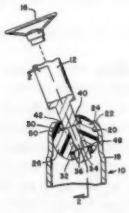
whereby the brand name is attractively and simultaneously displayed in close juxtaposed proximity to said drink packaging containers and brand name appearing thereon enhancing the merchandising thereof and enabling positive identification of said drink by brand name avoiding unnecessary and unintended opening of said door enclosures.

4,274,268

UNIVERSAL JOINT

Alistair G. Taig, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 2, 1979, Ser. No. 54,365
Int. Cl.³ F16D *3/02*
U.S. Cl. 64—7 **3 Claims**



1. In a joint for connecting a pair of members which transmit rotation between said pair of members, one of said members defining a cavity for receiving a portion of said other member, a pair of sockets rotatably disposed within said cavity for rotation in a first plane, one of said pair of sockets including means to pivotally secure said other member for rotation in a second plane substantially perpendicular to said first plane, and means releasably cooperating with said pair of sockets and said other member to prevent separation between said pair of members when said means is coupled with one of said sockets and to permit separation between said members when said means is spaced from said one socket, said means comprising at least one spring clip disposed between said other member and one of said pair of sockets and said one spring clip being releasably coupled to said one socket.

4,274,269

MANUALLY CONNECTABLE FLEXIBLE COUPLING

Gordon C. Trabue, Louisville, Ky., assignor to Chemetron Process Equipment, Inc., Louisville, Ky.

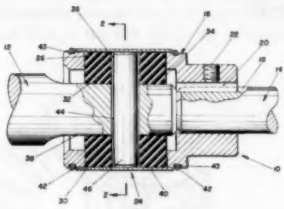
Filed May 2, 1979, Ser. No. 35,359
Int. Cl.³ F16D *3/52*
U.S. Cl. 64—11 R **10 Claims**

1. In a flexible mechanical coupling of the type comprising a pair of generally axially aligned shafts, a tubular collar adapted to receive the proximal ends of said shafts, and first and second locking means securing the respective shafts to said collar, the improvement wherein one of said locking means comprises a connector releasable by direct manual manipulation without the use of tools, including:

a cutout extending through the side wall of said collar;

a flat formed in the diameter of one of said shafts and adapted to be disposed beneath said cutout when the one shaft is received within said collar;

a resilient locking member loosely fitted to said cutout and adapted to be removably received therewithin in abutment against said flat, but detached from said one shaft



and said collar, for restricting relative rotation between the collar and said one shaft, and

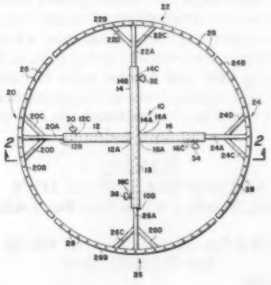
a retainer on said collar manually shiftable to and from a position retaining said locking member in its rotation-restricting position within said cutout.

4,274,270

APPARATUS FOR STRETCHING AN ANIMAL HIDE

Thomas H. Johnson, Rte. 3, Anderson, Mo. 64831

Filed Oct. 1, 1979, Ser. No. 80,255
Int. Cl.³ C14B *1/26*; D06C *3/08*
U.S. Cl. 69—19.3 **4 Claims**



1. Apparatus for stretching an animal hide comprising:

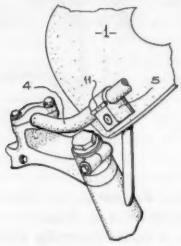
a central frame in the form of a plurality of tubular members one end of each of which is affixed to a common central point;

a plurality of stretcher members extending radially from said frame, each stretcher member including a radially extending leg portion telescopically received in a said frame tubular member, and including means of retaining each said stretcher leg portion at selected telescopic positions, each stretcher member having an arcuate outer circumferential portion, the stretcher members and outer circumferential portions lying in a common plane; and a plurality of spaced prongs extending from each of said arcuate portions adaptable to engage an animal hide adjacent the periphery thereof.

4,274,271
HELMET LOCKING DEVICE

John Todd, and Gregory M. K. West, both of 2 Campbellfield Ave., Campbelltown, N.S.W., 2560, Australia

Filed Apr. 6, 1979, Ser. No. 27,822
Claims priority, application Australia, Apr. 17, 1978, PD4060
Int. Cl.[3] E05B 67/36, 69/00
U.S. Cl. 70—59 3 Claims



1. A device for locking a motorcycle safety helmet to a constructional element of a motorcycle comprising:

a body portion securable to said constructional element;

a locking member having a pair of projecting parallel pins, said pins being extendable through cooperating apertures in a wall of said motorcycle safety helmet and thence into said body portion;

and a pin-tumbler cylinder lock in said body portion; said body portion being composed of a U-shaped member and a cavitied member, said U-shaped and cavitied members being hingedly connected together to define therebetween a cylindrical bore clampable about said constructional element, and said U-shaped member having one limb thereof elongated, which elongated limb overlies said cavitied portion and is securable thereto when said body portion is clamped about said constructional element; said pin-tumbler cylindrical lock being contained within said cavitied portion having a lock barrel portion of said cylinder lock including a pair of spring jaws attached thereto, and at least one projecting pin of said locking member having a cooperating free end including a pair of opposed notches engageable with said spring jaws; said spring jaws disengaging from said notches upon forcible disengagement of said helmet from said constructional element, thereby preventing serious damage to said helmet.

4,274,272
MECHANICAL DIGITAL LOCK

David T. Wang, Taipei, and Sun-Tong De, Taichung, both of Taiwan

Filed Sep. 22, 1978, Ser. No. 944,786
Int. Cl.[3] E05B 37/16
U.S. Cl. 70—214 23 Claims

1. A mechanical digital lock for use on a door which opens and closes within a frame, said lock comprising:

a casing mountable on the door,

latch means carried by said casing and movable into and from locking engagement with the door frame,

manually actuable handle means carried by said casing and accessible externally of the casing,

latch actuating means displaceably carried by said casing and operably connected to said handle means and said latch means so as to be displaced in response to actuation of said handle means to move said latch means into and from said locking engagement;

a plurality of key means carried by said casing, each key means including a manually displaceable key accessible externally of said casing,

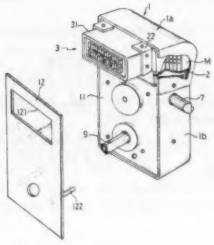
a plurality of selecting means carried by said casing and each arranged to be engaged and displaced by an associated one of said key means when the key thereof is displaced,

identifying means carried by said casing and actuable by said selecting means to permit displacement of said latch actuating means for moving said latch from said locking position, said identifying means comprising:

a plurality of independently movable elements arranged to be engaged and moved to a release mode by an associated one of said selecting means when the latter is displaced by its associated key means,

each element including gate means arranged to prevent displacement of said latch actuating means to unlock said latch means unless said element is in its release mode;

all of said elements, except an initially actuable one of said



elements, including stop means normally preventing movement to said release mode,

all of said elements, except a finally actuable one of said elements, including stop-deactivating means response to movement of said element to its release mode for deactivating the stop means of the subsequent element to permit the latter to move to its release mode, so that all of said elements can be moved to the release mode only when actuated in proper sequence,

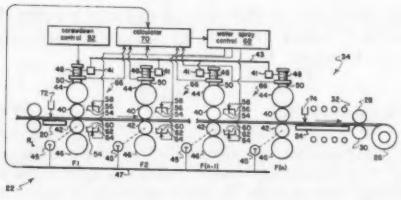
retaining means carried by said casing for releasably holding each of said elements in a release mode, and

resetting means carried by said casing and operably connected to said handle means and retaining means to release said retaining means when said handle means is moved to lock said latch for enabling said elements to move out of said release mode.

4,274,273
TEMPERATURE CONTROL IN HOT STRIP MILL

Donald J. Fapiano, Salem, and Michael A. Smith, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Oct. 3, 1979, Ser. No. 81,563
Int. Cl.[3] B21B 37/10, 37/08, 45/02
U.S. Cl. 72—13 17 Claims



1. In a hot strip rolling mill including at least one mill stand having opposed work rolls where a metal workpiece is reduced in thickness by passing the workpiece between said opposed work rolls, said mill stand having means to sense the

force applied to the workpiece and at least one controllable water spray means positioned adjacent thereto, a method for controlling the temperature of the workpiece during the rolling process, comprising the steps of:

(a) sensing the force applied to the workpiece at said mill stand during a plurality of successive time intervals;

(b) determining the reduction in workpiece thickness at said mill stand during each of said intervals;

(c) developing the deformation resistance of said workpiece, during each of said intervals, from the ratio of the force applied to the workpiece to the reduction in workpiece thickness;

(d) determining an apparent temperature change in the workpiece, if any, as a function of the differences between the initial and each successively developed deformation resistance; and,

(e) controlling the application of a water spray from said spray means onto said workpiece as a function of said apparent temperature change to thereby control the temperature of said workpiece.

4,274,274

ROLLING MILLS

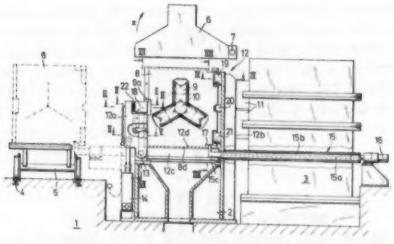
Theodor Zacharias, Meerbusch, and Bernhard Terdenge, Düsseldorf, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,317

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2845051

Int. Cl.³ B21B *31/10*

U.S. Cl. 72—239 **11 Claims**



1. A rolling mill having interchangeable stands arranged in tandem in mountings of a rolling mill frame, and a rolling mill drive at one side of the stands, the mill being provided with at least one change-over trolley which is movable parallel to the rolling axis at the operating side remote from the mill drive for the purpose of conveying the stands when removed from the rolling mill frame, which stands are selectively insertable into the mountings of the rolling mill frame or in mountings of the change-over trolley, the mountings of the rolling mill frame being of substantially U-shaped construction and open at the top and having hinged limbs which are swingable up at the operating side remote from the rolling mill drive, the hinged limbs of the mountings being usable as clamping means for the stands during the rolling operation, and being usable as bridges between the rolling mill frame and the change-over trolley during transfer of the stands between the frame and the trolley.

4,274,275

METHOD OF FORMING A CORRUGATED ANNULUS

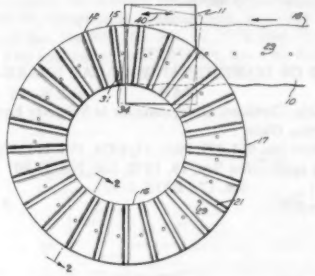
Edward Battersby, 229 High St., Cumberland, R.I. 02864

Filed Mar. 21, 1979, Ser. No. 22,603

Int. Cl.³ B21D *13/10*

U.S. Cl. 72—307 **3 Claims**

1. The method of forming a radially convoluted partial annulus from flat strip stock wherein a first and second forming tool is mounted on a rotatable assembly which comprises clamping the stock, a first tapered tool engaging and bending the stock laterally of its longitudinal extent at substantially right angles to provide a first corrugated wall as said assembly rotates a finite amount in a first direction, then while holding the bent stock in the bent position, oppositely bending the stock about the engaged first tapered tool by a second tool while allowing said assembly of the tools to rotate a further amount to substantially provide a second wall of a corrugation substantially parallel to the first wall, the corrugation being



tapered to extend a greater depth at one edge than the other, said stock taking an arcuate form in generally the plane of feed as it exits the assembly, then releasing the stock and rotating the assembly of both bending tools in a reverse direction relative to the stock, feeding the stock forwardly and again clamping the stock and performing the first and second bending operations and repeating until at least a partial annulus is formed.

4,274,276

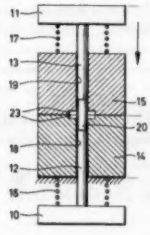
METHOD AND APPARATUS FOR PRODUCING A WORKPIECE BY EXTRUSION MOLDING

Karl Mettler, Vaduz, Liechtenstein, assignor to Etablissement Supervis, Vaduz, Liechtenstein

Filed Jul. 31, 1978, Ser. No. 929,716

Int. Cl.³ B21J *13/02*

U.S. Cl. 72—354 **4 Claims**



1. A method of producing a workpiece from a blank of cold flowable material by extrusion molding, said method comprising the steps of:

placing said blank in a mold cavity comprising two mold halves symmetrical about a separation line between said mold halves, a fixed punch closing one end of the cavity in the first mold half and a movable punch closing the opposite end of the cavity in the second mold half, the respective mold halves being connected to their punches by elastic means having substantially identical elastic force;

moving said movable punch toward said fixed punch by a predetermined distance; and simultaneously

together moving said mold halves toward said fixed punch by a distance substantially equal to half said predeter-

mined distance, whereby said fixed and movable punches travel at the same speed and for the same distance with respect to the separation line, said mold halves remaining stationary with respect to each other;

whereby the pressure on said blank exerted by said fixed punch and said movable punch is symmetrical, said two mold halves move symmetrically with respect to said punches and the material of the workpiece blank flows within the mold cavity symmetrically with respect to the separation line of the mold coincident with the plane between the mold halves.

4,274,277

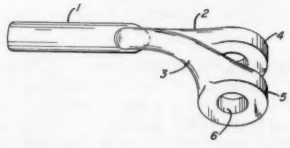
METHOD OF MAKING RAILWAY CAR BRAKE-ROD JAW

Roland E. Cale, Cortland, Ohio, assignor to Schaefer Equipment Inc., Warren, Ohio

Division of Ser. No. 961,499, Nov. 17, 1978, Pat. No. 4,196,642. This application Sep. 19, 1979, Ser. No. 77,097

Int. Cl.³ B21K *1/74*

U.S. Cl. 72—356 **2 Claims**



1. The method of making a railway car brake-rod jaw, comprising forging metal stock into a blank consisting of a rod-like shank joined at one end to the inner ends of a pair of forks having enlarged flattened outer ends projecting laterally of the forks in the same direction and provided with pin-receiving openings therethrough, said forging forming one fork substantially in axial alignment with said shank and forming the other fork longer than said one fork and extending laterally away from the shank and then outwardly beside said one fork with its enlarged end projecting toward the other enlarged end, then twisting both forks in the same direction to turn said enlarged ends into laterally spaced parallel planes inclined approximately 45° to the laterally extending portion of said other fork, and then bending the outwardly extending portion of said other fork relative to said laterally extending portion to move the enlarged end of that fork into a position in which its pin-receiving opening is axially aligned with the opening in the other enlarged end.

4,274,278

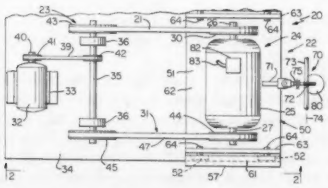
TRANSMISSION TESTING MACHINE AND METHOD

Gene L. Patterson, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Nov. 13, 1979, Ser. No. 93,327

Int. Cl.³ G01M *13/02*

U.S. Cl. 73—7 **30 Claims**



1. In a machine for testing a power transmission device comprising a drive for driving said power transmission device and means for loading said power transmission device, the improvement wherein said loading means comprises a power recovery system comprising, a coupling having an input shaft and an output shaft, said shafts being free of mechanical connections therebetween, first means operatively connecting said power transmission device to said input shaft, and second means operatively connecting said output shaft to said drive, said coupling having integral means operating to drive said output shaft at a speed which approaches but is less than the speed of said input shaft to thereby provide supplementary power for said drive in driving said power transmission device, said system providing testing for any desired loading of said power transmission device with only the power necessary to overcome losses in said machine thereby resulting in a substantial power recovery.

4,274,279

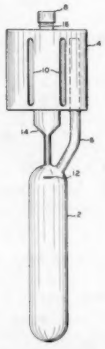
VISCOSITY MEASURING DEVICE

John J. Meister, Gainesville, Fla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 28, 1978, Ser. No. 964,400

Int. Cl.³ G01N *11/06*

U.S. Cl. 73—55 **3 Claims**

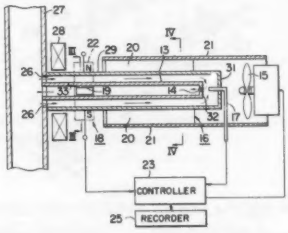


1. An apparatus suitable for measuring viscosity comprising a top container and a bottom container, a restricted flow conduit in open communication with the bottom portion of the top container and the top portion of the bottom container, a pressure equalizing conduit in open communication with a locus within the top portion of the bottom container and with a locus within the top portion of the top container, said equalizing conduit entering into said top portion of the top container through the bottom of said top container, a filling means in the top portion of said top container, said apparatus being adapted to receive into the bottom container a measured quantity of liquid, the viscosity of which is to be measured and to pass said measured quantity of liquid at least through said equalizing tube into said top container from said bottom container upon inverting said apparatus so that the time taken for a measured quantity of said liquid to flow from said top container to said bottom container through said restricted flow conduit upon returning said apparatus to its upright position can be measured, said upper container having a diameter greater than said bottom container and said equalizing tube being entirely comprised within the outermost periphery of said top container.

4,274,280
PLUGGING INDICATOR

Hiromichi Nei; Ryoichi Ohtani, both of Yokohama; Iwao Ohshima, Kawasaki, and Yuji Horikawa, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 26, 1979, Ser. No. 79,203
Claims priority, application Japan, Oct. 2, 1978, 53/120415
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—61 LM **2 Claims**

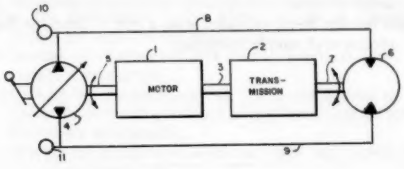


1. A plugging indicator comprising concentric outer and inner pipes one ends of which are connected to a main conduit through which liquid metal passes, said inner pipe being provided with a first opening at an end wall thereof remote from said main conduit to act as a plugging orifice and a second opening through the side wall thereof near said main conduit to act as a bypass orifice, an electromagnetic pump mounted on said outer pipe for branching said liquid metal passing through said main conduit into said outer pipe, means for measuring flow quantity of the liquid metal passing through said outer pipe, cooling means mounted on said outer pipe, means for measuring temperature at said plugging orifice, a blower for supplying cooling air to said cooling means, and means for controlling said blower in response to the flow quantity at said flow quantity measuring means and the temperature at said plugging orifice.

4,274,281
HYDRAULIC TESTING SYSTEM

Louis S. Hoodwin, Rte. 1, Box 246, Sawyer, Mich. 49125

Filed Sep. 27, 1978, Ser. No. 946,156
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—118 **1 Claim**

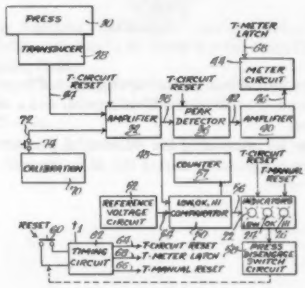


1. A hydraulic testing apparatus consisting of
a power transmitting component on which a torque load is to be applied, said component having two or more rotary coupling terminals;
a variable displacement hydraulic pump coupled mechanically to a terminal on one power side of the power transmitting component;
a hydraulic motor or motors coupled mechanically to each terminal on the other power side of the power transmitting component;
a closed hydraulic interconnecting system whereby the above hydraulic units are all fluid connected in series;
a rotary power source with means to rotate the terminals of the power transmitting component;
a means for varying the displacement of the pump thus creating a differential hydraulic pressure between the input and output sides of the pump and also creating a torque load on the power transmitting component, and
a means for measuring the torque load.

4,274,282
SENSOR FOR RECIPROCATING PRESS

Tadas Budraitis, Midlothian, and Gerald W. Seliga, Frankfort, both of Ill., assignors to Productronix, Inc., Oak Forest, Ill.

Division of Ser. No. 920,714, Jun. 30, 1978, Pat. No. 4,195,563. This application Jun. 25, 1979, Ser. No. 51,852
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—862.64 **6 Claims**



1. In a cyclically operating machine having a transducer for providing a voltage proportional to load during a cycle of the machine, an improved load measuring circuit comprising:
a first operational amplifier, a first capacitor and a diode, said first capacitor connected to said first operational amplifier for storing the voltage received from the transducer, said diode connected in parallel with the capacitor for dissipating a voltage of reverse polarity, said operational amplifier amplifying the voltage across the first capacitor;
means for discharging said first capacitor to remove any stored voltage remaining thereupon upon the completion of a cycle of the machine;
amplitude detecting means coupled to said first amplifier for detecting the amplitude of the transducer load signal;
means for establishing a HI reference voltage;
means for establishing a LOW reference voltage;
means for comparing the voltage of the transducer load signal with said HI reference voltage and said LOW reference voltage; and
indicator means responsive to the comparing means for indicating if said load signal voltage is greater or less than each of the LOW reference voltage and the HI reference voltage.

4,274,283
APPARATUS AND METHOD FOR MEASURING FLUID GEL STRENGTH

L. Donald Maus, and George G. Binder, Jr., both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

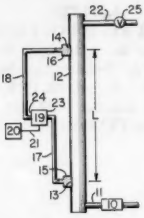
Continuation-in-part of Ser. No. 952,022, Oct. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 883,555, Mar. 6, 1978, abandoned. This application Sep. 20, 1979, Ser. No. 77,219
Int. Cl.³ E21B *47/06*
U.S. Cl. 73—153 **22 Claims**

1. An apparatus for measuring the properties of a liquid which comprises:

(a) a nonhorizontal conduit positioned to conduct liquid therethrough,

(b) means for measuring the pressure differential between two vertically spaced locations in said conduit,

(c) means for flowing liquid through said conduit at a rate where the shear rate of the flowing liquid is in the range of greater than zero to about 20 sec^{-1},



(d) means for cyclically interrupting flow of liquid through said conduit to provide a flow interval and a static interval, and

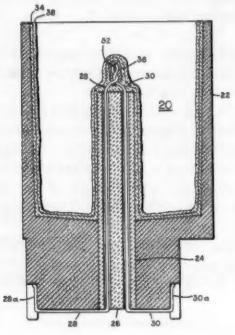
(e) means for measuring the differential pressure between said spaced locations during the static interval.

4,274,284

EXPANDABLE PHASE CHANGE DETECTOR DEVICE

Richard J. Hance, Philadelphia, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Apr. 14, 1980, Ser. No. 140,353
Int. Cl.³ G01K *13/12*
U.S. Cl. 73—354 **6 Claims**



1. An expendable phase change detector device for determining the composition of molten metal by thermal analysis, comprising:

a cup,

a thermocouple junction located in a central area of said cup,

a refractory coating covering said thermocouple junction, and

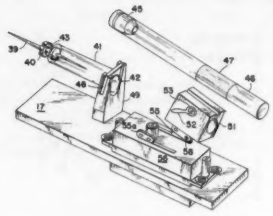
means responsive to the temperature of said thermocouple junction for ablating said refractory coating from said thermocouple junction when molten metal to be analyzed is poured into said cup and contacts said refractory coating on said thermocouple junction.

4,274,285

AUTOMATED SYRINGE SAMPLER

Gerald C. Purgold, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 11, 1980, Ser. No. 111,438
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—683.31 **9 Claims**



1. Apparatus for remotely sampling a fluid medium comprising:

at least one evacuated sample receiving container disposed within the fluid medium to be sampled;

a resilient septum sealingly disposed within an opening in said sample receiving container;

a double ended hollow needle disposed such that one end thereof is adjacent to said resilient septum;

signal responsive means for effecting selective relative linear movement of said sample container and said double ended needle toward and away from each other whereby when said sample container and said double ended needle move relatively toward each other said double ended needle will penetrate said resilient septum and permit the fluid medium to enter said evacuated sample container and when said sample container and said double ended needle are linearly moved relatively away from each other said needle will be removed from said resilient septum to seal the fluid sample within said container;

said signal responsive means being an electrically actuated servo-mechanism;

a base plate for said apparatus;

means for fixedly securing said servo-mechanism to said base plate;

an exposed linearly movable actuator arm disposed on said servo-mechanism;

a sample container bracket secured to said actuator arm; and,

said bracket being provided with a pair of jaws serving to receive said sample container.

4,274,286

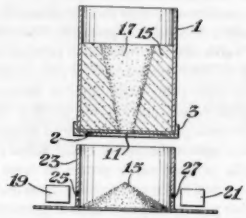
POWDER FLOWABILITY TEST EQUIPMENT

Alberto Gioia, Como, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

Filed Aug. 6, 1979, Ser. No. 64,150
Int. Cl.³ G01N *11/04*
U.S. Cl. 73—432 R **9 Claims**

1. A powder flowability test device which essentially con-

sists in a cylinder which is fitted at the bottom with a disk containing a central hole of varying diameter closed by a



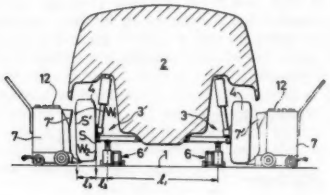
removable plate, said cylinder having an inside diameter which is larger than the largest hole diameter.

4,274,287

METHOD FOR MEASURING UNBALANCED WHEELS OF AN AUTOMOTIVE VEHICLE

Reiken Kaneda, Kawasaki, Japan, assignor to Kohgiken Corporation, Tokyo, Japan

Filed Dec. 21, 1979, Ser. No. 106,085
Claims priority, application Japan, Dec. 28, 1978, 53/161233
Int. Cl.³ G01M *1/28*
U.S. Cl. 73—457 **4 Claims**



1. A method for on-the car measuring of static and dynamic unbalance of the wheels of an automotive vehicle, said method comprising the steps of:

supporting the vehicle at two laterally spaced apart points of an imaginary axis that connects the center of the right and left wheels in a pair of wheels, the support being provided by a transducer at each point;

rotating the wheel to be balanced about the imaginary axes;

detecting oscillations in the wheel due to an unbalance thereof by means of the transducers;

measuring the distance between the two points on which the vehicle is supported;

measuring the distance between the inside surface of the rotating wheel and a first one of the two points on which the vehicle is supported;

measuring the distance between the inside and outside surface of the wheel; and

applying a correction weight at the location determined by said detection step, the value of said correction weight being determined by the equations:

$$f_1=(l_1+l_2)R_1+l_2\cdot R_2$$

and

$$f_1=(l_1+l_2+l_3)R_1+(l_2+l_3)R_2$$

wherein:

l_1=the distance determined by said first measuring step;

l_2=the distance determined by said second measuring step;

l_3=the distance determined by said third measuring step;

f_1 and f_2=centrifugal forces due to unbalance; and

R=a detected force

and by the equation:

$$w=g\omega^2 rf_1{}^1$$

wherein:

W=value of the unbalance weight

g=gravity (9.8 m/S^2)

ω=angular speed

r=radius of rotation of the unbalance weight

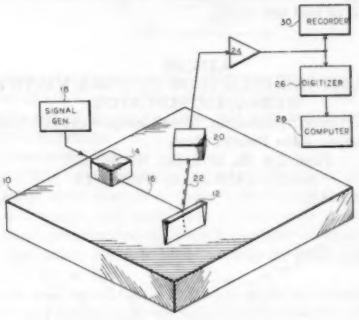
$f_1{}^1$=peak value of f_1

4,274,288

METHOD FOR MEASURING THE DEPTH OF SURFACE FLAWS

Bernhard R. Tittmann, and Lloyd A. Ahlberg, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 23, 1979, Ser. No. 59,822
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—602 **12 Claims**



1. A method for measuring the depth a of a surface breaking flaw in an object, comprising the steps of:

(a) irradiating the flaw with an incident acoustic surface wave signal;

(b) detecting a reflected acoustic surface wave signal, including a first portion reflected from the surface edge of the flaw and a second portion reflected from the bottom of the flaw; and

(c) determining the depth of the flaw by analyzing the interference between the first and second portions of the reflected signal.

4,274,289

TRANSDUCER POSITIONING SYSTEM FOR ULTRASONIC TIRE TESTING APPARATUS

Arnold A. Weiss; David C. Christensen, and Bruce H. Sikkema, all of Minneapolis, Minn., assignors to AMF Incorporated, Santa Ana, Calif.

Filed Aug. 29, 1979, Ser. No. 70,688
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—618 **7 Claims**

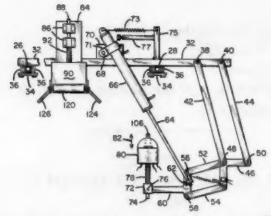
1. In an ultrasonic vehicle tire test system:

(a) a fixture for holding a tire casing totally in air and rotating same about a central axis, said fixture including an articulated arm which is movable between a first and a second disposition with respect to said tire casing;

(b) a first transducer array including a plurality of ultrasonic transducers, each producing a directional beam of ultrasonic energy when pulsed by electrical impulses of a predetermined frequency, said first transducer array being

affixed to said arm with the individual transducers disposed in a compact cluster arrangement; and

(c) actuator means connected to said arm for moving said first transducer away from a first disposition outside of the opening defined by a sidewall of said tire casing to a second disposition within said tire casing between the



sidewalls with the individual transducers of said first transducer array being in a close but non-contact relationship with respect to the tread portion of said tire casing and oriented to direct their individual beams of ultrasonic energy in a combined fashion so as to span the entire width of said tire casing.

4,274,290

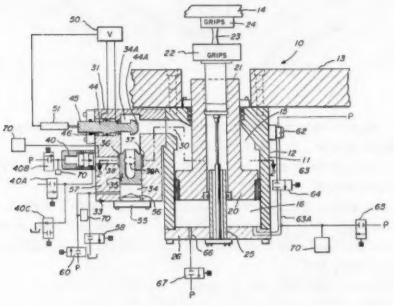
RAPID OPENING, HIGH FLOW CONTROL VALVE FOR HYDRAULIC ACTUATOR

Martin M. Gram, Minneapolis, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Filed Oct. 30, 1978, Ser. No. 955,807

Int. Cl.[3] F15B *21/00*; G01N *3/10*

U.S. Cl. 73—837 **5 Claims**



1. In a specimen testing system, an actuator utilized for compression or tension testing of a specimen at a controllable velocity and for a controlled distance along a linear axis, an actuator cylinder having an internal piston and a control rod connected to said specimen, the improvement comprising a high rate fast opening valve to control incompressible fluid under pressure to act on said cylinder including a valve body, accumulator means comprising a chamber having an output connection and being formed in part by a movable piston defining an output chamber portion having a known amount of incompressible fluid therein, pressurized gas means urging said movable piston to provide the known quantity of incompressible fluid at the output connection of the accumulator means, a bore in said valve body having an inlet port and an outlet port, passageway means connecting the output connection of the accumulator means to the inlet port, said actuator being fluidly coupled to said outlet port, a poppet valve piston mounted in said bore and movable from a closed position wherein it closes off flow from said inlet port to said outlet port to an open position where said poppet valve piston permits flow from said inlet port to said outlet port, said poppet valve piston having portions open to said substantially incompressible fluid under pressure at said inlet port when the poppet valve piston is in closed position, and being urged thereby toward open position, menas to provide a second compressible fluid under pressure on said poppet valve piston urging said poppet valve piston to position closing off flow from said inlet port to said outlet port, means to permit selectively reducing the second fluid under pressure to a level which permits the poppet valve piston to start to move to open position, substantial surface portions of said poppet valve piston thereafter being acted on by the first fluid to move the poppet valve piston to open position at a substantially increased force and to fully open the poppet valve piston and discharge the output chamber portion of the accumulator means and to provide only the known quantity of the incompressible fluid to the actuator to load said attached specimen rapidly for a controlled amount of movement, and an adjustable throttle valve means positioned in the fluid flow path between said poppet valve piston and said outlet port to adjustably control the size of the flow path for the known quantity of incompressible fluid under pressure.

4,274,291

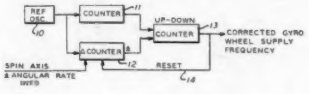
GYRO WHEEL SPEED COMPENSATION

George F. Schroeder, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Oct. 30, 1978, Ser. No. 955,864

Int. Cl.[3] G01C *19/08*

U.S. Cl. 74—5.37 **6 Claims**



1. A strapdown inertial gyro system comprising:

a source of timing signals for driving the wheel of the gyro of said system,

means for scaling down the frequency of said source of timing signals,

a source of signals indicative of the spin axis angular rate of said inertial system,

means responsive to said spin axis angular rate signals and said reference signals for providing a pulse rate signal proportional to the spin axis angular rate of the inertial system, and

means responsive to said scale down means and said means for providing a signal proportional to the angular rate for counting said outputs to provide a signal correcting the gyro wheel momentum.

4,274,292

COMPACT STARTER ASSEMBLY

Robert D. Arnett, Jr., 4534 College Park, Dallas, Tex. 75229

Filed Oct. 11, 1979, Ser. No. 83,766

Int. Cl.[3] F02N *7/08, 15/02*

U.S. Cl. 74—6 **3 Claims**

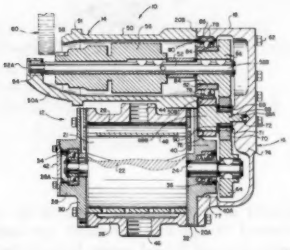
1. A compact starter assembly comprising, in combination:

a drive motor assembly including a housing formed with a bore, an end plate covering the bore on one end of the housing, and a rotor body having a power shaft journalled

on the drive motor housing for rotation in the housing bore, the rotor body extending through the bore with the power shaft projecting through the end plate;

the end plate having an annular coupling surface concentric with the power shaft;

a drive pinion assembly including a housing, a pinion shaft extending through the pinion housing and having one end journalled for rotation on the pinion housing and the opposite end projecting out of the pinion housing, and a drive pinion gear axially movable on the pinion shaft into and out or mesh engagement with the flywheel gear of an engine to be started;



the pinion housing end through which the pinion shaft projects having an annular coupling surface concentric with the pinion shaft; and

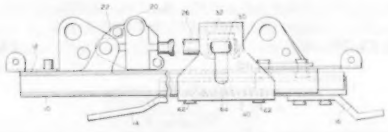
a gear train assembly coupling the power shaft in driving engagement with the pinion shaft, the gear train assembly including a housing having a first coupling surface disposed in mating engagement with the end plate coupling surface and a second coupling surface disposed in mating engagement with the pinion housing coupling surface, the drive pinion assembly and the drive motor assembly being mounted on the gear train housing in side-by-side relation with the drive motor power shaft extending in parallel relation with the pinion shaft.

4,274,293

DRIVE BLOCK STRUCTURE FOR AN ADJUSTABLE VEHICLE SEAT TRACK

Dean L. Ruger, Manitou Beach, Mich., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 23, 1979, Ser. No. 41,650
Int. Cl.³ F16H *29/20*
U.S. Cl. 74—89.15 **8 Claims**



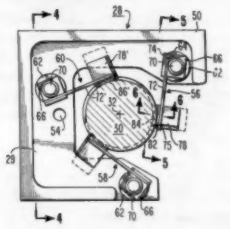
1. In an adjusting mechanism for a vehicle seat track having a lower track adapted to be secured stationarily to a vehicle and an upper track movable relative to said lower track to provide adjustable movement between a seat and said vehicle, and in which there is a lead screw mated with a drive block for controlling relative movement of the upper track relative to the lower track in response to rotation of the screw in the drive block, in which there is a drive block holding mechanism affixed to one track and with lead screw rotating means coupled to the other track, the invention in which the block holding mechanism has a pair of transversely spaced, opposed brackets with a slot in each bracket in alignment with one another, each of said slots having an opening, and comprising a drive block with its body extending between said brackets, said drive block including mounting lugs resting in said openings and extending therethrough, and each mounting lug including a head externally of the bracket with each head periphery greater than the size of the bracket opening thereby to hold the drive block firmly between said brackets.

4,274,294

APPARATUS FOR CONVERTING ROTARY MOTION TO LINEAR MOTION

Bohdan W. Siryj, Cinnaminson, and Loren D. Moore, Palmyra, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 53,922
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—89.15 **8 Claims**



1. Apparatus for converting rotary motion of a screw about a given axis to linear motion parallel to that axis in the presence of distortion of the screw from said axis during said rotary motion comprising:

a frame member,

a plurality of nut segments each including a set of parallel, linear teeth adapted to tangentially engage the threads of said screw, said teeth having their roots undercut and crests removed leaving a tooth structure comprising a side wall which lies substantially along the pitch diameter of said screw, and

a like plurality of resilient segment mounting means secured to said frame, each mounting means resiliently securing a different segment to the frame for resilient radial displacement of that segment in a direction normal to said given axis and further securing that segment from displacement in a direction normal to said radial direction, said segments being circumferentially equally spaced about said given axis whereby said segments translate uniformly in a direction along said given axis with respect to said rotating screw while radially resiliently deflecting in response to said distortion during said translation.

4,274,295

VARIABLE RATIO BELT DRIVE

William L. Grube, 410 Green St., Lake Bluff, Ill. 60044

Continuation of Ser. No. 611,867, Sep. 10, 1975, abandoned. This application Aug. 9, 1977, Ser. No. 823,037
Int. Cl.³ F16H *55/52*
U.S. Cl. 474—23 **3 Claims**

2. A variable speed belt drive mechanism comprising:

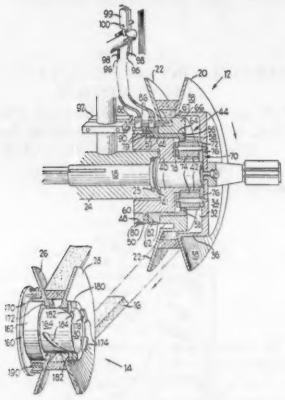
(a) an input drive shaft;

(b) two pulley halves mounted upon said drive shaft for receiving rotational power from said input shaft and transmitting same to a flexible drive member;

(c) annular control means mounted concentrically upon said drive shaft and extending radially therefrom for journaling one of said pulley halves for rotation with said other pulley half and for effecting axial movement of said pulley half; and

(d) said control means including a first and second collar operatively connected to a gear, brake means mounted on one of said collars to effect relative rotation of said gear

and at least one of said collars relative to said input drive shaft, said control means including a threaded connection



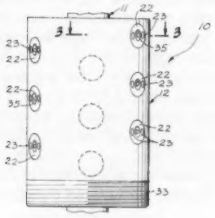
for effecting axial movement of said pulley half upon actuation of said brake means.

4,274,296

SELF-CENTERING SELF-ALIGNING ANTI-FRICTION ROTOR AND SCREW

Lawrence J. Miller, Whittier, Calif., and Raymond W. Born, 4211 First St., Santa Ana, Calif. 92703, assignors to Raymond W. Born, Santa Ana, Calif.

Filed Mar. 19, 1979, Ser. No. 21,626
Int. Cl.³ F16H *1/18*
U.S. Cl. 74—424.8 R **20 Claims**



1. A rotor for use with a threaded shaft to convert rotary movement of one thereof to linear movement of the other comprising:

thick walled tube having an internal diameter larger than a threaded shaft useable therewith;

said tube having a plurality of rollers journalled in and coaxially of non-radial bores extending through the wall thereof and having their axes lying in a helix having the same pitch as the threaded shaft useable with said rotor, the inner ends of said rollers projecting beyond the inner wall of said tube and adapted to have rolling contact with the thread sidewall of a threaded shaft; and

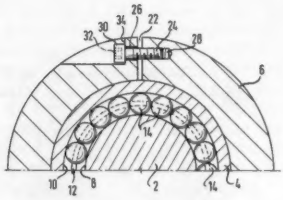
the axes of said rollers being offset axially along said helix in the same direction and parallel to a respective radial plane containing the axis of said rotor, the offset distance being so related to the pitch of said helix and the diameter of the inner ends of said rollers that said inner ends are adapted to have non-scuffing rolling contact with the thread sidewall of a threaded shaft.

4,274,297

SPINDLE DRIVE MECHANISM WITH CIRCULATING BALLS

Günter Blurock, Niederwerrn, and Ernst Albert, Sand, both of Fed. Rep. of Germany, assignors to Deutsche Star Kugelhalter GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jan. 25, 1979, Ser. No. 6,483
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1978, 2805141
Int. Cl.³ F16H *29/20*
U.S. Cl. 74—424.8 R **34 Claims**



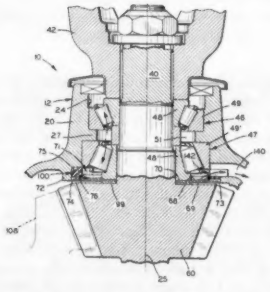
1. A spindle drive mechanism comprising: spindle means having external thread means formed thereon; spindle nut means having internal thread means formed thereon; said external and internal thread means being of equivalent pitch and defining therebetween ball duct means; a plurality of circulating balls operatively engaged within said ball duct means for effecting transmission of axial forces between said spindle means and said spindle nut means upon relative rotative movement therebetween; ball circulating means including means defining ball inlet means and ball outlet means in said ball duct means for effecting circulation of said balls through said ball duct means and between said ball outlet means and said ball inlet means; and compensating means for enabling adjustment of the diametral dimension of said spindle nut means to effect adjustment of the operating pressure between said spindle means and said spindle nut means thereby to provide for compensation of the degree of play between said balls and said ball duct means; said internal and external thread means each being constructed in the form of grooves having flanks which approach each other obliquely at the groove bottoms, each of said grooves being shaped to engage said balls at two points of contact.

4,274,298

DRIVE UNIT SEAL ASSEMBLY

Robert J. Ostrander, 7132 Putt La., Fort Wayne, Ind. 46815

Filed Jul. 6, 1979, Ser. No. 55,420
Int. Cl.³ F16H *57/04*; F01M *9/10*
U.S. Cl. 74—467 **2 Claims**



1. A drive assembly comprising

a housing defining a bore;

a shaft extending through said bore and rotatable relative to said housing, said shaft having a generally radially extending surface adjacent said bore;

an annular lubricant chamber at least partially defined by said bore and said surface, said lubricant chamber having an outlet; and

a seal within said lubricant chamber, said seal comprising means for providing a seal between said bore and said surface, said seal further comprising a protuberance extending into said outlet for preventing rotation of said seal with respect to said housing.

4,274,299

COLLAPSIBLE STEERING COLUMN

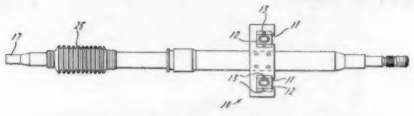
Bryan Jones, Chelmsford, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1978, Ser. No. 973,279

Claims priority, application United Kingdom, Feb. 4, 1978, 4560/78

Int. Cl.³ B62D *1/16*

U.S. Cl. 74—492 **2 Claims**



1. A steering column for a motor vehicle comprising:

a first and second steering shaft sections extending coaxially along the length of said column;

a member interconnecting said shaft sections constructed to transmit stearing torque between them;

said member being axially deformable under an axially directed impact load applied to either of said shaft sections;

said first shaft section having an end telescopically received in one end of the second shaft section;

said telescopically interconnected ends being constructed to function as an axial guide for relative movement of said shaft sections under impact causing the collapse of said member;

one of said end ends of said first shaft section being of non-circular cross section and being telescopically received with a recess of similar non-circular cross section in the receiving end of the second shaft section wherein the receiving end forms a clearance fit with respect to the said one end of the first shaft section to allow limited relative rotation between the two shaft sections when the torque transmitting deformable member does not transmit torque from one shaft section to the other section, said limited relative rotation being noticeable to an operator of a motor vehicle.

4,274,300

APPARATUS FOR AUTOMATICALLY MAINTAINING THE TAUTNESS OF A MECHANICAL COUPLING BETWEEN AN ACTUATABLE DEVICE AND AN ASSOCIATED ACTUATING MECHANISM

Gary L. Golobay, Augusta, Kans., assignor to Conchemco, Incorporated, Lenexa, Kans.

Filed Sep. 24, 1979, Ser. No. 77,989

Int. Cl.³ F16C *1/22;* F16D *65/44*

U.S. Cl. 74—501.5 R **8 Claims**

1. In apparatus for automatically maintaining the tautness of mechanical coupling means extending between and oppositely coupled with a shiftable component of an actuatable device and a shiftable part of an actuating mechanism operably associated with said device and disposed in spaced relationship to said device, wherein said component is normally urged generally away from said mechanism and into an unactuated position thereof but is movable from said unactuated position generally toward said mechanism and into an actuated position thereof in response to application thereto of a force directed generally toward said mechanism, and wherein said part has a standby position relatively nearest said device but is movable from said standby position generally away from said device and into an actuating position thereof for applying said force to said component to actuate said device:

structure disposed generally between said device and said mechanism and in fixed relationship thereto;

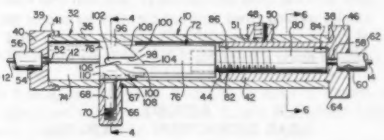
a shiftable element disposed generally between said device and said mechanism;

motion restricting means operably coupling said structure with said element for restraining said element against rotation about an axis extending generally along at least a portion of the path of extension of said mechanical coupling means between said device and said mechanism,

said element being reciprocable along said axis;

a shiftable member disposed generally between said device and said mechanism and along said axis,

said member being both rotatable about said axis and reciprocable along said axis;



threaded connecting means operably intercoupling said element and said member along said axis for reciprocation of said element and said member together as a single assembly along said axis and for automatically drawing the remote extremities of said assembly of said element and said member disposed along said axis closer to each other when said member is rotated about said axis in one direction relative to said element;

cooperating rotary cam and follower means having continuously interengaged cam and follower parts operably intercoupling said member and said structure for rotating said member about said axis in said one direction relative to said element when said assembly is reciprocated back and forth along said axis through a distance greater than a predetermined range of desired reciprocation thereof; and

means for operably intercoupling said assembly in series interposed relationship within said mechanical coupling means between said component of said actuating device and said part of said actuating mechanism.

4,274,301

HANDLE STEM FIXING DEVICE FOR A BICYCLE AND THE LIKE

Hitoshi Katayama, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 30, 1978, Ser. No. 921,068

Claims priority, application Japan, Jul. 12, 1977, 52-92841[U]

Int. Cl.² B62K *21/16;* F16B *13/10*

U.S. Cl. 74—551.1 **7 Claims**

1. A fixing device for fixing a hollow handle stem to a front fork of a bicycle comprising:

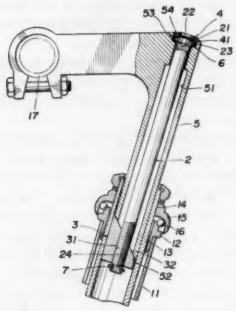
a bolt having a screw thread and being inserted through said handle stem;

a cone screwed with said thread; and

retaining means for retaining said bolt to said handle stem in relation of being substantially axially fixed;

said bolt having a head with a rotary control adapted to permit rotating of the bolt, said head including a larger diameter portion than the stud of said bolt, said retaining means comprising at least one retainer being engaged with said larger diameter portion of the bolt permitting relative rotation of said bolt with respect to said retainer and

connected with said handle stem so as to substantially fix said bolt axially with respect to said handle stem, whereby when said bolt is turned said retainer remains stationary



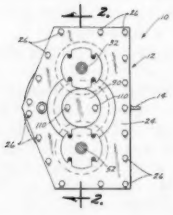
and restricts axial movement of said bolt and said cone is axially moved from said handle stem by use of the thrust of the screw thread of said cone, whereby said handle stem is made detachable from the front fork.

4,274,302

GEAR REDUCTION APPARATUS

Saul Herscovici, Waterloo, Iowa, assignor to Power Engineering and Manufacturing, Ltd., Waterloo, Iowa

Filed Mar. 12, 1979, Ser. No. 19,744
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—661 **7 Claims**



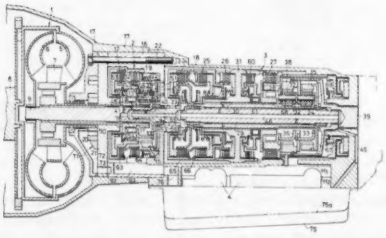
1. A gear reduction apparatus comprising,
a housing means,
a first input shaft rotatably mounted in said housing means and adapted to be connected to a power source, said first input shaft having a toothed gear means thereon,
a second input shaft rotatably mounted in said housing means and adapted to be connected to a power source, said second input shaft having a toothed gear means thereon,
an output power means rotatably mounted on said housing means and adapted to be connected to a driven member,
means for operatively connecting said output power means to said toothed gear means of said first and second input shafts for rotation of said output power means in response to rotation of said first and second input shafts,
a first flywheel mounted on said first input shaft, and
a second flywheel mounted on said second input shaft,
said means for connecting the output power means to the toothed gear means on the first and second input shafts comprising a toothed gear means mounted on said output power means and being in mesh with said toothed gear means of said first and second input shafts,
the toothed gear means on said first input shaft including a first toothed gear portion and a second toothed gear portion having a fewer number of teeth than said first toothed gear portion,
said toothed gear means on said output power means including a first toothed gear portion in mesh with the first toothed gear portion of said first input shaft and a second toothed gear portion in mesh with the second toothed gear portion of said first input shaft, said second toothed gear portion of said output power means having a greater number of teeth than the first toothed gear portion thereof, and
means for selectively coupling one of said first and second toothed gear portions on said output power means to the output power means for rotation therewith.

4,274,303

AUTOMATIC TRANSMISSION WITH OVERDRIVE

Yoshio Shindo, and Hiroshi Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 832,828, Sep. 13, 1977, abandoned. This application Dec. 5, 1978, Ser. No. 966,592
Claims priority, application Japan, Apr. 27, 1977, 52-47877
Int. Cl.³ F16H *37/00, 57/02*
U.S. Cl. 74—740 **8 Claims**



1. An automatic transmission with overdrive comprising:
a hydrokinetic torque converter having a pump impeller, stator vanes and turbine vanes;
a housing encompassing the outer periphery of said torque converter therein;
an oil pump having an oil pump body positioned adjacent to said torque converter, and an oil pump cover partitioning a pump chamber from said oil pump body;
an overdrive gear mechanism positioned adjacent to said oil pump but in coaxial relation to said torque converter, with an input side of said mechanism being coupled to said turbine vanes in said torque converter, thereby transmitting torque from an input side to an output side at a gear reduction ratio not greater then 1;
an overdrive case surrounding said overdrive gear mechanism in cooperation with said oil pump cover and having a multiple disc brake operatively mounted within an inner circumferential face of said overdrive case;
an underdrive gear mechanism positioned adjacent to said overdrive gear mechanism but in coaxial relation to said torque converter, having an input shaft coupled to an output side of said overdrive gear mechanism, thereby transmitting torque from an input side to an output side of said underdrive gear mechanism at a plurality of reduction ratios of not less than 1, said overdrive case including a bush rotatably supporting therein said input shaft of said underdrive gear mechanism;
a transmission case encompassing the top and side of elements of said underdrive gear mechanism in cooperation with said overdrive case;
a hydraulic control device arranged under said underdrive gear mechanism and controlling a hydraulic pressure to be delivered to said overdrive gear mechanism and underdrive gear mechanism; and
an oil pan encompassing the undersurface of said underdrive gear mechanism;

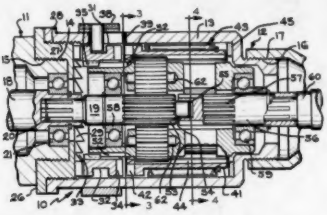
said overdrive case being formed with a first passage connected to an inlet port of said oil pump, a second passage connected to a discharge port of said oil pump, a third passage connected to an inlet port of said torque converter, and a fourth passage connected to an outlet port of said torque converter, with the second, third, and fourth passages being connected to said hydraulic control device through oil passages within the transmission case corresponding to the oil passages thereof.

4,274,304

IN-LINE REVERSING MECHANISM

George R. Curtiss, Chardon, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 29, 1978, Ser. No. 891,186
Int. Cl.[3] F16H *3/44, 57/10;* E02D *7/02*
U.S. Cl. 74—792 **10 Claims**



1. A reversing mechanism for a power tool comprising, in combination, a housing, an input shaft having gear teeth, an output shaft having gear teeth, a rotatable cage disposed about said shafts and having gear teeth on its inner surface, a gear carrier intermediate said shafts and said cage, a pair of gears mounted within said carrier and meshed with said input shaft gear teeth and said cage gear teeth, a pair of gear trains each including two meshed gears mounted within said carrier, one gear of each of said gear trains meshed with said output shaft gear teeth and the other gear of each of said gear trains meshed with said cage gear teeth, and a brake collar operatively engaged with said gear carrier and having a first position in which said collar is coupled to said cage and a second position in which said collar is coupled to said housing, whereby bidirectional rotation of said output shaft is achieved from unidirectional rotation of said input shaft by selective positioning of said collar.

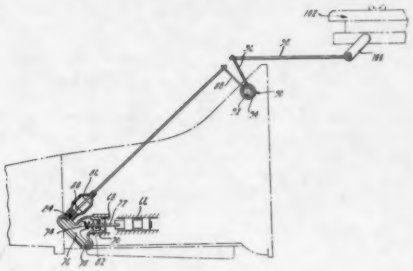
4,274,305

TRANSMISSION THROTTLE VALVE ACTUATOR FOR AN AUTOMATIC TRANSMISSION

Hesham A. Roushdy, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 9, 1979, Ser. No. 28,132
Int. Cl.[3] B60K *41/06;* G05G *1/00*
U.S. Cl. 74—865 **2 Claims**

1. A mechanical linkage system for operating a transmission throttle valve and an automatic control valve circuit for an automatic transmission in an automotive vehicle driveline that includes an internal combustion engine with a carburetor throttle, said linkage comprising a first linkage element adapted to be connected mechanically to the engine carburetor throttle at one end, a force multiplying lever actuator means for moving the transmission throttle valve, a second linkage element having one end thereof connected to said actuator, a preloaded torsion spring connecting the other end of said first linkage element with the other end of the second linkage element whereby an initial throttle valve actuating force is applied to the transmission throttle valve upon initial movement of the carburetor throttle and wherein an increase in the magnitude of the force applied to said transmission throttle valve is accompanied by flexure of said torsion spring which permits independent movement of said first linkage element with respect to said second linkage element, said torsion spring comprising a coiled spring mounted on a stationary portion of said



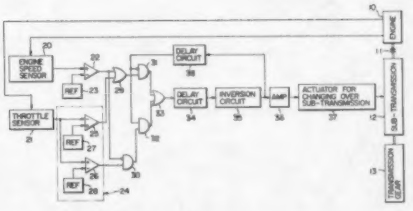
transmission mechanism and having lever arms extending from each side of said spring, one arm being connected to said other end of said linkage element and the other arm being connected to the other end of said first linkage element.

4,274,306

VEHICLE TRANSMISSION SHIFT CONTROL APPARATUS

Takeshi Yokoi, and Noritaka Yanagihara, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 16, 1979, Ser. No. 39,609
Claims priority, application Japan, Aug. 30, 1978, 53-105828
Int. Cl.[3] B60K *41/10, 41/06*
U.S. Cl. 74—866 **5 Claims**



1. In a vehicle which is driven by an engine via a transmission, a transmission shift control device for minimizing the brake specific fuel consumption of the vehicle, said device comprising:

a throttle sensor which detects the value which represents the throttle opening of the engine and generates a throttle signal;

an engine speed sensor which detects a value which represents the engine rotational speed and generates an engine speed signal;

a throttle comparator which receives at least one reference signal which it compares with the throttle signal which it receives from said throttle sensor and generates a signal resulting from the comparison;

an engine speed comparator which receives a reference signal and compares it with the engine speed signal which it receives from said engine speed sensor and generates a signal as a result of the comparison; and

a switching circuit means which generates either an upshift command or a downshift command and sends it to the transmission on the basis of said signals fed to it from said throttle and engine speed comparators, said upshift command being generated when said brake specific fuel consumption of said vehicle is lowered by said engine speed being reduced while maintaining the engine output power

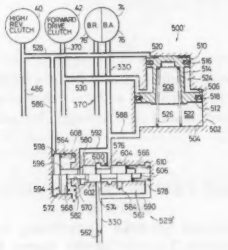
constant, and said downshift command being generated when said brake specific fuel consumption is lowered by said engine speed being increased while maintaining the engine output power constant.

4,274,307

SHOCK CONTROL ARRANGEMENT IN HYDRAULIC CONTROL SYSTEM OF AUTOMATIC POWER TRANSMISSION

Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 6, 1978, Ser. No. 957,781
Claims priority, application Japan, Aug. 30, 1978, 53-105897
Int. Cl.[3] B60K *41/10*
U.S. Cl. 74—869 **11 Claims**



1. In an automatic power transmission having an automatic forward drive range condition, a reverse drive gear condition and first, second and third gear ratios in the automatic forward drive range condition and including a transmission mechanism having incorporated therein a fluid operated first frictional unit contributive to the selection of the reverse drive gear condition and the shifting from the second gear ratio to the third gear ratio in the automatic forward drive range, a fluid operated second frictional unit contributive to the shifting from the first gear ratio to the second gear ratio in the automatic forward drive range condition and a fluid operated third frictional unit contributive to the selection of the automatic forward drive range condition, and a hydraulic control system including control fluid pressure generating means for producing a control fluid pressure throughout the automatic forward drive range and reverse drive range conditions, a shock control arrangement for reducing shocks to be produced during selection of any of the automatic forward drive range and reverse drive gear conditions or upshifting between any two of the first, second and third gear ratios in the automatic forward drive range condition, comprising

a pressure accumulator unit operatively intervening between the control fluid generating means and each of the first, second and third frictional units and including a fluid operated piston having a first pressure acting area to be acted upon by a fluid pressure and urge the piston to move in a first direction when the first frictional unit is to be actuated, a second pressure acting area to be acted upon by a fluid pressure and urge the piston to move in a second direction opposite to the first direction when the second frictional unit is to be actuated and a third pressure acting area to be acted upon by a fluid pressure and urge the piston to move in the first direction when the third frictional unit is to be actuated, and biasing means for constantly urging the piston to move in the second direction;

passageway means for discharging the fluid pressure to act on the second pressure acting area;

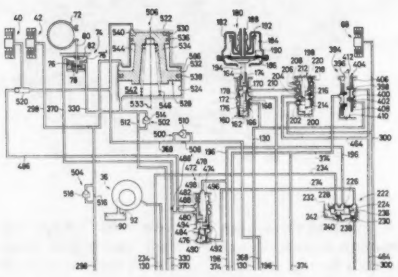
valve means operatively intervening between the second frictional unit and the control pressure generating means and responsive to the fluid pressure to actuate the first frictional unit and act on the first pressure acting area, said valve means including a valve element which is movable into and out of a limit position providing communication between the second frictional unit and the control pressure generating means and closing said passageway means and which is responsive to the fluid pressure to actuate the first frictional unit for being urged to move away from said limit position thereof, and biasing means for constantly urging the valve element toward the limit position thereof.

4,274,308

SHOCK CONTROL ARRANGEMENT IN HYDRAULIC CONTROL SYSTEM

Kazuyoshi Iwanaga, Yokohama; Kazuhiko Sugano, Tokyo, and Kunio Ohtsuka, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 957,782, Nov. 6, 1978, abandoned. This application Mar. 23, 1979, Ser. No. 23,475
Int. Cl.[3] B60K *41/06*
U.S. Cl. 74—869 **31 Claims**

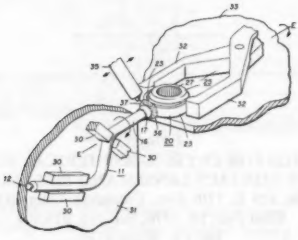


1. An automatic power transmission having an automatic forward drive range condition, a reverse drive gear condition and predetermined two gear ratios in the automatic forward drive range condition and including a transmission mechanism having incorporated therein a fluid operated first frictional unit contributive to the selection of said reverse drive gear position, a fluid operated second frictional unit contributive to shifting from one of said gear ratios to the other and a fluid operated third frictional unit contributive to the selection of said automatic forward range condition, and a hydraulic control system including first control pressure generating means for producing a first control fluid pressure variable with engine load and second control pressure generating means for producing a second control fluid pressure variable with and not lower than said first control fluid pressure, a shock control arrangement for reducing shocks to be produced during selection of any of said automatic forward drive range conditions and said reverse drive range condition or during shifting between said gear ratios, the arrangement comprising: a pressure accumulator unit operatively intervening between said second control pressure generating means and each of the first, second and third frictional units, said pressure accumulator unit being in fluid communication with said first, second and third frictional units, said pressure accumulator unit including a fluid operated piston having a first pressure acting area to be acted upon by a fluid pressure and urge the piston to move in a first direction when said first frictional unit is to be actuated, a second pressure acting area to be acted upon by a fluid pressure and to urge the piston to move in a second direction opposite to said first direction when said second frictional unit is to be actuated and a third pressure acting area to be acted upon by a fluid pressure for urging the piston to move in said first direction when said third frictional unit is to be actuated, and resilient biasing means for urging said piston to move in said second direction; and hydraulic fluid circuit means for directing said second control fluid pressure selectively to said first, second and third frictional units.

4,274,309
METHOD OF MANUFACTURE OF CERTAIN HAND WRENCHES AND THE LIKE

Paul E. Lenker, c/o Davenport Tool Company, 1132 E. LeClaire Rd., Eldridge, Iowa 52748

Filed Feb. 22, 1980, Ser. No. 123,669
Int. Cl.[3] B21K 5/16
U.S. Cl. 76—114 7 Claims



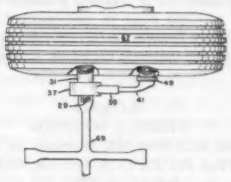
1. In the manufacture of hand tools, each including an extending operating handle and a generally U-shaped yoke for carrying the housing of a work performing assembly adapted for pivoting about a first axis between the legs of the yoke, said axis being defined by a pair of axially aligned trunnions extending from opposite locations on the assembly housing and a corresponding pair of axially aligned trunnion journals in the yoke legs adjacent the ends thereof, one end of the handle adjoining the exterior of the yoke intermediate its legs such that the yoke and a longitudinal portion of the handle adjacent said end thereof are symmetrically disposed with respect to a pair of planes normal to each other, the first axis lying in one of said planes, whereby said handle end and the yoke legs form a pair of opposite shoulder areas and a pair of opposite face areas therebetween, the shoulder areas being disposed at right angles relative to the face areas with respect to a second axis defined by the intersection of said planes, an improved method of manufacturing said tools comprising: fabricating the yoke including said journals by punching from sheet or strap material and then partially bending to shape; positioning the assembly housing between the yoke legs with their respective trunnions and journals in axial alignment with each other; holding the handle, the yoke and the assembly housing in their aforesaid positions relative to each other while rotating the same about said second axis; and adding material in and adjacent said shoulder and face areas by welding means disposed adjacent thereto as said areas pass the welding means during said rotation while compressing the yoke legs upon the assembly housing to fully engage the housing trunnions in their journals.

4,274,310
TORQUE MULTIPLICATION DEVICE

Robert P. Michaud, Altamont, N.Y., assignor to Roberta H. Wessendorf, Guilderland, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,564
Int. Cl.[3] B25B 13/00; G01L 5/24
U.S. Cl. 81—57.36 11 Claims

1. A torque multiplication device for use in tightening or loosening a nut, lug, bolt head and the like; said torque multiplication device comprising planetary transmission means of operatively engaged sun, planet and orbit gear means for producing an output torque constituting an input torque applied to said transmission means and multiplied by a multiplication factor through said transmission means, said transmission means having input drive means to receive such applied torque input and output drive means to transmit such output torque to said nut, lug, bolt head and the like for tightening or loosening same, and brake means for braking said orbit gear means, said brake means carrying an anchoring socket for securement with another nut, lug, bolt head and the like to brake said orbit gear means, said anchoring socket carrying locking screw means, said anchoring socket freely mounting in a rotary direction a ring gear, said ring gear operatively engaging said locking screw means to advance inwardly said locking screw means

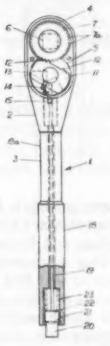


for locking engagement of said locking screw means with the faces of such another nut, lug, bolt head and the like or to withdraw outwardly said locking screw means for release from such locking engagement.

4,274,311
RATCHET WRENCH HANDLE

Emil Ebert, 2900 S. 9th Ave., Broadview, Ill. 60153

Filed Jul. 23, 1979, Ser. No. 59,588
Int. Cl.[3] B25B 13/46
U.S. Cl. 81—63 7 Claims



1. A reversible ratchet handle for a socket wrench comprising a head portion and an elongated lever arm portion attached to the head portion and extending in the opposite direction therefrom,

said head portion comprising first and second sections adjacent to each other and formed in said head portion in the shape of circular recessed areas intersecting one another,

a tool driver being rotatably mounted in said recessed area of said first section for engaging a socket wrench,

a switching member pivotably mounted in said recessed area of said second section, for selectively engaging said tool driver and changing the rotation thereof from one direction to an opposite direction, means for actuating said switching member so that it selectively engages and changes direction of rotation of said tool driver, and

means for locking said switching member in position so that it continuously engages said tool driver in rotation in a predetermined direction,

said lever arm portion including an elongated tube integrally formed with said head portion, and said actuating means including a rod telescopically and longitudinally disposed in said tube, the inner end thereof engaging said switching member, and a plunger-type push-button mounted at the outer end of said tube, said push-button being attached to

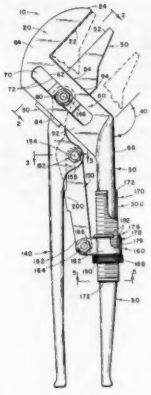
the outer end of said rod and engaging the same such that each time said push-button is actuated, said rod engages said switching member to pivotally rotate and disengage one of its toothed portions from engagement with said toothed edge of said ratchet wheel, while at the same time moving another of its toothed portions into engagement with said toothed edge of said ratchet wheel, so as to effect a change in rotation of said ratchet wheel from one direction to the opposite direction thereof.

4,274,312

TOGGLE WRENCH

Kenneth F. Finn, R.R. Box 468, Macomb, Ill. 61455

Filed Jul. 31, 1979, Ser. No. 62,479
Int. Cl.³ B25B *7/04*
U.S. Cl. 81—356 **13 Claims**



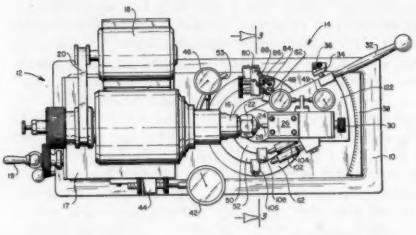
1. A toggle wrench comprising a first jaw having a first compression surface on a rearward side thereof and disposed substantially in a first plane and having a terminal end, first elongated handle extending rearwardly in a direction at an obtuse angle with respect to said first compression surface, a second jaw having a second compression surface disposed substantially in a second plane parallel to said first plane, a track section interconnecting an inner end of said first jaw and the forward end of said first handle, said track section having an elongated track extending at a right angle to and substantially rearwardly from said first compression surface, said second jaw having track follower means thereon cooperatively correlated with said track section and slidably secured to said track section in a manner permitting said second jaw to slide along said track section toward and away from said first jaw while said second compression surface is always maintained in substantial parallelism with said first compression surface, a second elongated handle, means pivotally attaching said second handle to said second jaw in a manner for the pivoting of said second handle about a forward axis disposed parallel to said first plane and at a right angle to the elongation of said track, said second handle extending away from said forward axis in a direction at sugstantially a right angle to said forward axis and at times in directions alongside said first handle, a toggle link pivotally attached to said second handle for rotation about an intermediate axis disposed in parallelism with said forward axis, a connector, means pivotally attaching said connector to said toggle link for pivoting of said toggle link with respect to said connector about a rearward axis parallel to and rearwardly of said intermediate axis, a first threaded means extending around and along said first handle and attached to said first handle, a second threaded means threadedly engaged with said first threaded means whereby rotation in each of two opposite directions of said first and second threaded means with respect to each other will cause said second threaded means to move in opposite directions forwardly and rearwardly along said first handle, said connector being operably attached to said second threaded means so that as said second threaded means moves in said opposite directions along said first handle said rearward axis will move toward and away from said track section.

4,274,313

APPARATUS FOR CUTTING ASPHERICAL SURFACES ON CONTACT LENSES AND THE LIKE

Sekula Vulic, 319 E. 17th Ave., Columbus, Ohio 43201

Filed Jun. 19, 1978, Ser. No. 916,601
Int. Cl.³ B23B *3/28*
U.S. Cl. 82—12 **13 Claims**



1. In a lathe for forming a lense shaped surface on a workpiece, said lathe being of the type having a support base, a headstock mounted to said support base and including a rotatably driven spindle for supporting a workpiece and a tool carriage mounted to said support base including a tool chuck supporting a tool, said chuck being pivotable about a pivot axis which is perpendicular to the axis of said spindle and adjustably translatable along its axis for positioning the tool a selected radial distance on either side of said pivot axis, an improved tool carriage comprising:

(a) a support frame mounted to said support base;

(b) an eccentric ring member having an inner and an outer circular bearing which are eccentric to each other;

(c) an outer bearing member mounted to said support frame and having a circular, inside bearing for rotatably mating with the outer bearing of said eccentric ring member;

(d) an inner bearing member supporting said tool chuck and having a circular, outside bearing which is concentric with said pivot axis for rotatably mating with the inner bearing of said eccentric ring member;

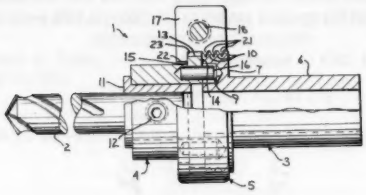
(e) cooperating catch means attached to said inner bearing member and said eccentric ring member for being selectively positioned to engage at a selected angle of rotation for effecting the rotation of said eccentric ring member simultaneously with the rotation of said inner bearing member and said tool subsequent to said engagement; and

(f) a stop means adjustably attached to said outer bearing member and said eccentric ring member for preventing pivotal movement of said eccentric ring member in one direction beyond zero reference angular alignment, said stop means being adjustable to selected angular positions about the center of said bearing of said outer bearing member to adjustably select the position of said zero reference angular alignment.

4,274,314
CLAMPING DEVICE

Bernard Repinski, 120 North St., Sharon, Wis. 53585

Filed Mar. 28, 1980, Ser. No. 135,076
Int. Cl.³ B23B *29/00, 5/22, 31/10*
U.S. Cl. 82—36 R **16 Claims**

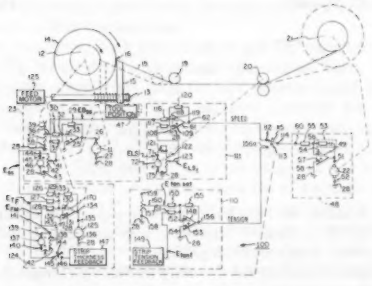


1. In a tool holder the combination comprising:
(a) an axially extending body member having an axially facing stop surface;
(b) a tool receiving member positioned axially alongside said body member with an axially directed abutment face opposing said stop surface;
(c) one of said members having an external first oblique camming surface that extends circumferentially of such member;
(d) the other of said members having a holding surface directed axially away from the member with said first oblique camming surface;
(e) a clamping member radially outside said body and tool receiving members, said clamping member having a radially inward directed second oblique camming surface that extends circumferentially in meshing relation with said first oblique camming surface, and a clamp surface axially opposing said holding surface of said member; and
(f) said clamping member being radially contractible to draw said first and second oblique camming surfaces together with a resultant axial positioning of the members.

4,274,315
ELECTRONIC CONTROL SYSTEM FOR STRIP PEELING APPARATUS

Donald E. Varner, Hanover, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jul. 25, 1979, Ser. No. 60,323
Int. Cl.³ B23B *1/00, 7/00, 3/04*
U.S. Cl. 82—47 **15 Claims**

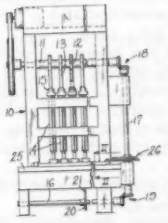


1. In an electronic control system for a strip peeling machine including a drive circuit providing electrical signals for operating a motor to rotate a billet of material supported on a spindle at a first speed and advancing a cutting tool into said rotating billet for peeling a continuous strip of said material with a predetermined thickness therefrom for attachment to a wind up spindle, a strip speed regulating circuit for supplying an electrical signal to cause a second drive circuit to operate a second motor to rotate said wind up spindle to pull and move said strip at a second speed, said signal supplied by said regulating circuit being proportional to the difference between said speed of said moving strip and said speed of said rotating billet, the improvement comprising:
tension regulating means having a tension sensing circuit for sensing tension on said strip and supplying an input signal to an input terminal of a first amplifier circuit for causing said first amplifier circuit to provide an output signal to said second drive circuit for operating said second motor to rotate said wind up spindle and automatically maintain a predetermined tension on said strip;
switching means for selectively disconnecting said strip speed regulating circuit from said second drive circuit and connecting said tension regulating circuit means to said second drive circuit;
feed motor means having a second amplifier circuit for supplying electrical signals to a feed motor coupled to said cutting tool in response to a first input electrical signal proportional to said first speed for operating said feed motor to advance said cutting tool at a first rate into said rotating billet for peeling said strip; and
means for sensing strip thickness and selectively supplying a proportional electrical signal to an input terminal of said second amplifier circuit to cause said second amplifier circuit to supply an electrical signal for operating said feed motor to advance said cutting tool at a second rate into said rotating billet to automatically maintain said predetermined thickness of said peeled strip.

4,274,316
CRANK PRESS BLANK HOLDER AND STRIPPER MECHANISM

Donald A. Roy, Waterbury; George F. O'Keefe, Southington, and Carl R. Kutelis, Bristol, all of Conn., assignors to Textron, Inc., Cheshire, Conn.

Filed Feb. 6, 1980, Ser. No. 119,118
Int. Cl.³ B21D *45/08*
U.S. Cl. 83—23 **8 Claims**



1. In a blank forming press including a frame, a vertically reciprocable plunger, a die bed positioned below said plunger, a main drive shaft rotatably mounted in said frame above said bed, said drive shaft having a crank thereon, a connecting rod actuated by said crank to impart a forming force to said plunger, a cam shaft rotatably mounted in said frame, drive means coupling said cam shaft to said drive shaft for synchronous operation therewith, a punch carried by the plunger, a stripper associated with the punch and adapted to act on a blank, a lever operative to move the stripper vertically, cam means on the cam shaft and adjustable means operatively connecting said cam means to said lever, said cam means and adjustable means being adjusted and operated to hold the stripper in blank-retaining position adjacent the die while the punch bottoms, to accompany the blank upward out of the die upon retraction of the punch and to strip the blank from the punch.

4,274,317
METHOD OF MONITORING A CONTINUOUSLY ADVANCING STRING MATERIAL

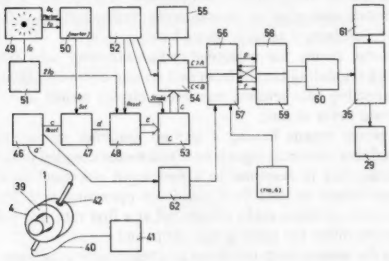
Philippe Vulliens, Palezieux-Gare, Switzerland, assignor to Baumgartner Papiers S.A., Crissier, Switzerland

Filed Apr. 4, 1979, Ser. No. 26,905

Claims priority, application Switzerland, Jan. 19, 1979, 535/79

Int. Cl.³ A24C *5/28*

U.S. Cl. 83—74 **24 Claims**



1. In a method of monitoring a continuously advancing string material of the kind comprising a continuous alternating succession of string sections of different material quality and-/or structural configuration with regard to the cutting of said string into discrete plugs of identical type, each comprising at least two sections of different material quality and/or different structural configuration, for the purpose of checking and automatically correctively adjusting the spacing of a cut made by a severing device relative to an immediately succeeding different section,

comprising the steps of

scanning the continuously advancing string before cutting it by a sensor unit which responds to individual string sections of different material quality and/or structural configuration;

detecting the start as well as the end of each string section;

generating concurrently an output signal by a device associated with the severing device to indicate the point in time at which the string is cut;

obtaining, from the moment at which the output signal appears, to the moment at which the sensor unit issues a signal corresponding to detection of the end of the string section to be severed, a measured value which is independent of the rate of feed of the string, and which is proportional to the length of the string section between the two signals;

comparing the measured value with at least one predetermined reference value; and

correctively adjusting the operative stroke of the severing device when a certain number of successive measured values deviate in the same direction from the predetermined reference value.

4,274,318
APPARATUS FOR SHAPING BATTS OF LOOSELY COMPACTED FIBROUS MATERIALS

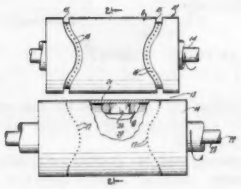
Anthony Passafiume, Burbank; Clarence F. Lamber, Country Hills Club, and William Dickover, Richton Park, all of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 888,818, Mar. 21, 1978, Pat. No. 4,216,687. This application Dec. 17, 1979, Ser. No. 104,519

Int. Cl.³ B26F *1/26, 3/00*

U.S. Cl. 83—177 **7 Claims**

1. Apparatus for shaping a batt of loosely compacted short fibers comprising; a first roll and a second roll disposed adjacent each other with their axes parallel and with their outer periphery spaced apart to form a nip for the passage of the batt to be shaped there between, the first roll being rotatable and having a recessed pattern disposed about the periphery of the roll in the shape desired to be produced in the batt, the second roll comprising a stationary inner shell and a rotatable outer shell, the outer shell having openings matching the recessed pattern of the first roll, means for rotating the first roll and said outer shell in opposite directions and at the same peripheral linear speed so that the openings in the outer shell are complimentary to the recessed pattern in the first roll, said inner shell



having an opening disposed transverse of its periphery and in a position adjacent to the first roll and directed there towards, means for presenting high-pressure air to the inner shell, said outer shell rotating about said inner shell so that the high-pressure air is directed continuously through the opening of the inner shell to the pattern of openings in the outer shell to the recessed pattern in the oppositely rotating first roll while a batt passes through the nip formed by the said rolls to form and sever the batt into the desired shape.

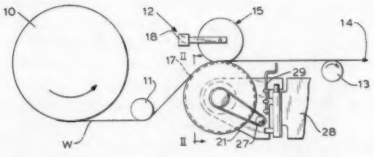
4,274,319
SLITTER FOR HIGH BULK TRAVELING PAPER WEB MATERIAL

Kenneth G. Frye, Lee, Mass., and Donald C. Fitzpatrick, Chatham, N.Y., assignors to Lenox Machine Company, Inc., Lenox, Mass.

Continuation-in-part of Ser. No. 810,575, Jun. 27, 1977, Pat. No. 4,157,672. This application Apr. 12, 1979, Ser. No. 29,398

Int. Cl.³ B26D *1/24*

U.S. Cl. 83—430 **11 Claims**



1. A slitter for high bulk traveling paper web material and adapted to be located between a web source and subsequent processing equipment comprising:

means for guiding the traveling web along a longitudinal axis of movement;

first and second rotary slitter blades having peripheral slitting edges cooperating at a web slitting cut point;

said first blade having its axis of rotation transverse to said longitudinal axis of movement of the web and having its slitting edge rotational in a plane which is parallel to said longitudinal axis of movement of the web;

said blades having their slitting edges at less than 0.030 inch overlap;

said second blade having its slitting edge at a rake angle of 0–10 minutes relative to the slitting edge of said first blade at said cut point;

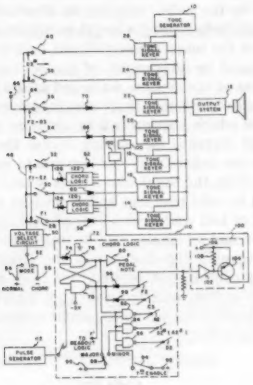
and said second blade slitting edge being at a toe-in angle of 5 to 30 minutes relative to said first blade slitting edge at said cut point.

4,274,320

ONE KEY CHORDING SYSTEM FOR ELECTRONIC KEYBOARD INSTRUMENT

Robert A. Finch, Palos Park, Ill., assignor to CBS Inc., New York, N.Y.

Filed Jun. 8, 1979, Ser. No. 47,171
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **13 Claims**



1. In an electronic keyboard instrument which includes:

a tone signal generating system for generating tone signals corresponding to notes in the musical scale;

an output system for translating tone signals into audible musical tones;

a set of tone signal keyers, each receiving one of said tone signals and being responsive to a keying signal on a keying terminal to key said tone signal to said output system; and

a keyboard having a plurality of single pole, single throw keyswitches, each identified in standard musical terms with a particular note of the musical scale;

a one key chording system comprising:

means connecting a preselected first group of said keyswitches to a first common bus;

means connecting each keyswitch of said first group to the keying terminal of a respective tone signal keyer and normally operative in response to a predetermined D.C. potential of one polarity on said first common bus and actuation of a keyswitch to supply a primary keying signal to the keying terminal of the respective tone signal keyer;

a set of chord logic circuits, each connected to one keyswitch of said first group and operative in response to a predetermined D.C. potential of opposite polarity on said first common bus and actuation of said one keyswitch to supply auxiliary keying signals to the keying terminal of a plurality of tone signal keyers of a preselected group of keyers such that said auxiliary keying signals will actuate a group of tone signal keyers associated with notes comprising a musical chord; and

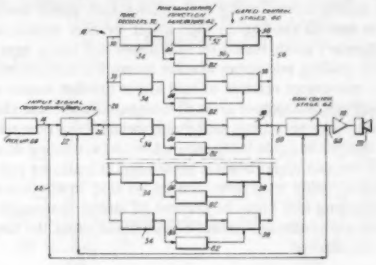
mode control means connected to said first common bus for selectively applying a D.C. potential of either said one polarity or said opposite polarity to said first common bus for providing a one-key chording mode or a normal play mode, respectively.

4,274,321

HARMONY AUTHORIZATION DETECTOR SYNTHESIZER

Jerome Swartz, 2 Marwood Pl., Stony Brook, N.Y. 11790

Filed Jul. 30, 1979, Ser. No. 61,854
Int. Cl.³ G10H *1/38, 3/18, 5/00*
U.S. Cl. 84—1.03 **12 Claims**



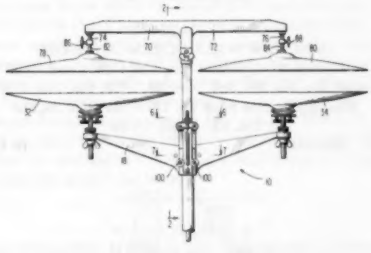
1. A harmony synthesizer for use with an instrument that successively has played thereon different single selected original aural notes of a melody to serve as a substitute player of a harmony for a melody played by a musician on said instrument, said synthesizer comprising a transducer for converting a single original aural note at a time emanating from the instrument into an original electric signal retaining at least the fundamental of the wave form of said original aural note, plural means responsive to the original electric signals for emitting for each single original aural note an associated harmony electric signal at a frequency which is in harmony with the fundamental of the original aural note, decay means for modulating the harmony electric signals so that they will fade at approximately the same rate as the single original aural notes, means to regulate the amplitude of the harmony electric signals so that they are functions of the amplitudes of the original electric signals, and means to combine each original electric signal with each associated harmony electric signal so that the two signals can be jointly fed to an output transducer which generates audible sounds from said combined signals.

4,274,322

DOUBLE HI-HAT SUPPORT BRACKETS

Charles P. Cordes, 27 Kenneth Pl., Clark, N.J. 07066

Filed Oct. 11, 1979, Ser. No. 83,711
Int. Cl.³ G10G *5/00*
U.S. Cl. 84—422 R **4 Claims**



1. A double hi-hat support bracket comprising upper bracket means having first attachment means for securing said upper bracket means to the upper end of the vertically reciprocable rod of a conventional hi-hat support, a pair of horizontal upper arms attached to and extending outwardly from opposite sides of said first attachment means and support means on the outer end of each arm for supporting the upper cymbal of a cymbal set on each upper arm, lower bracket means having second

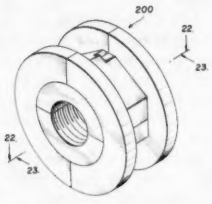
attachment means for securing said lower bracket means to the upper end of the hollow tube of a standard hi-hat support, a pair of horizontal lower arms attached to and extending outwardly from opposite sides of said second attachment means and support means on the outer end of each lower arm for supporting the lower cymbal of a cymbal set on each lower arm, spring means connected between said upper and lower bracket means for normally maintaining said upper bracket means in spaced relation to said lower bracket means, and complementary guide means on said upper and lower bracket means for guiding said upper bracket means for vertical reciprocatory movement relative to said lower bracket means and for maintaining said upper arms in substantially vertical alignment with said lower arms, said guide means being comprised of a flat elongated guide blade secured to and extending downwardly from said upper bracket means and at least one pair of low friction guide members secured to said lower bracket means engaging said blade to prevent all lateral movement of said blade and rotary movement of said blade about the longitudinal axis thereof.

4,274,323

SHAFT-MOUNTED ASSEMBLY

Herbert Resnicow, 107 Weeks Rd., East Williston, Long Island, N.Y.

Filed May 8, 1979, Ser. No. 37,200
Int. Cl.³ F16B *43/00*
U.S. Cl. 411—433 **15 Claims**



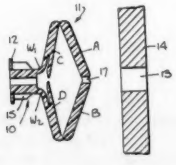
1. An assembly which may be mounted on a shaft without passing over the end of the shaft, said assembly comprising four segments which are sized and shaped to encircle the shaft and which interlock with each other, each of said four segments having two radially spaced pairs of projecting tongues and two radially spaced grooves, each of which is sized and shaped to receive a projecting tongue from each of two of the other segments, thereby interlocking all four segments in two radially spaced places.

4,274,324

HOLLOW WALL SCREW ANCHOR

Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807

Division of Ser. No. 897,368, Apr. 18, 1978, Pat. No. 4,197,781.
This application May 16, 1979, Ser. No. 39,322
Int. Cl.³ F16B *35/04*
U.S. Cl. 411—38 **10 Claims**



1. A screw anchor for installation in a hole drilled in a hollow wall, said anchor being molded of synthetic plastic material and comprising:

A. a shank constituted by a pair of front legs and a pair of rear legs in a diamond-like configuration, said front legs being hinged together by a front apex living hinge having an opening therein, said front legs being joined to said rear legs by side apex living hinges, the ends of said rear legs defining a rear apex;

B. a socket attached to said shank adjacent said rear apex by a pair of normally outstretched resilient webs that merge with said rear legs, said webs having a memory resulting in the return of the webs to their normal state when the webs are flexed and thereafter released, whereby when said diamond-like shank is compressed at said side apex hinges, it is transformed into a tongue which is insertable in said hole, making it possible to seat said socket therein; said tongue, after passing through the hole, then being caused by the webs to resume its diamond-like configuration, said webs having a length permitting hinging thereof adjacent the inner surface of said hollow wall at a point determined by the length of the socket relative to the thickness of said hollow wall, said socket having a bore in registration with said front apex opening; and

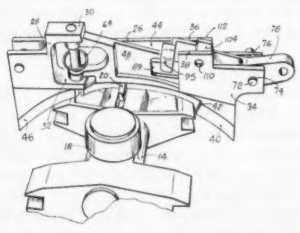
C. a screw which is turnable into said bore and is threadably engaged thereby, the turning screw then advancing to engage the ends of said rear legs and to spread them apart to transform the shank into a truss whose bottom chord is formed by said rear legs and is pressed against the inner surface of said wall to prevent removal of said anchor, the point of said advancing screw then entering and threadably engaging the opening in the front apex hinge to define a central strut between the front apex of the truss and the socket, whereby the truss may be collapsed by withdrawal of the screw to permit removal of the anchor from the hole.

4,274,325

SAFING MECHANISM FOR HIGH RATE OF FIRE REVOLVING BATTERY GUN

Ronald R. Snyder, Georgia, and Lincoln L. Sibley, Jr., South Burlington, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Jul. 17, 1979, Ser. No. 58,359
Int. Cl.³ F41D *7/04*
U.S. Cl. 89—12 **4 Claims**



1. In a Gatling type gun having:
a housing;
a rotor journaled for rotation with respect to said housing along a longitudinal axis;
said rotor having a plurality of gun bolts disposed in an annular row with respective firing pin assemblies; and
switchable firing pin assembly control means fixed with respect to said housing for sequentially engaging each of said firing pin assemblies and having a first disposition for positively precluding searing of each firing pin assembly and a second disposition for forcing timely searing of each firing pin,
said firing pin assembly control means including
first means having

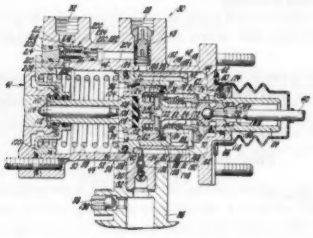
a first annular cam surface having
a longitudinally forward, lower portion,
a longitudinally rearward, higher portion, and
therebetween a lacuna in said cam surface,
the improvement of:
a second means having
a second cam surface disposed in said lacuna and transversely pivotally mounted and actuated for longitudinal movement to and between a first disposition whereat said second cam surface provides a continuum and a gradual decline between said higher portion to said lower portion of said first cam surface, and a second disposition whereat it provides a gradual return to said lower portion of said first cam surface from within said lacuna.

4,274,326

HYDRAULIC BOOSTER WITH BACK PRESSURE CONTROL

Denny L. Peeples, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1979, Ser. No. 16,086
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—49 **3 Claims**



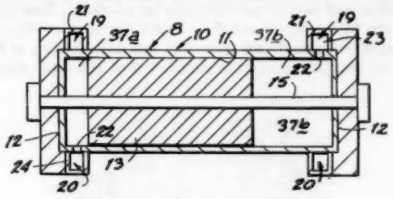
1. In an open center hydraulic booster having a hydraulic fluid inlet and a hydraulic fluid outlet, a power piston having a power chamber on one side connected to said inlet and an exhaust chamber on the other side connected to said outlet, an open center control valve means permitting hydraulic fluid flow from said power chamber to said exhaust chamber and operable to actuate said booster by restricting or preventing said flow to cause hydraulic power pressure to be impressed in said power chamber, the improvement comprising:
a back pressure control valve positioned fluidly intermediate said open center control valve means and said fluid outlet and having an inactive condition providing substantially no flow restriction downstream of said open center control valve means, said back pressure control valve comprising a valve piston reciprocably movable in a bore operatively connecting said fluid inlet and said fluid outlet, a port forming a part of said fluid outlet and positioned to be restricted by said valve piston in accordance with movement of said valve piston toward said fluid outlet in response to booster actuating pressure in said fluid inlet acting thereon, said valve piston restricting flow of hydraulic fluid downstream of said open center control valve means and creating a hydraulic back pressure on said open center control valve means which is substantially less than the booster actuating pressure in said fluid inlet and said power chamber and which decreases valve noise generated by booster actuating operation of said open center control valve means,
said valve piston having a bore therethrough with a valve seat formed therein, and a spring loaded, normally closed, pressure relief valve in said valve piston bore cooperating with said valve seat and responsive to a predetermined maximum booster actuating pressure at said fluid inlet to open and bypass hydraulic fluid from said fluid inlet to said fluid outlet to limit booster actuating pressure to said predetermined maximum pressure.

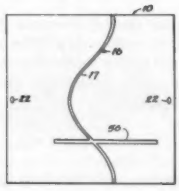
4,274,327

EXPANSIBLE CHAMBER DEVICE

Orin J. Olsgaard, 527 Ford, Missoula, Mont. 59801

Filed Feb. 16, 1979, Ser. No. 12,610
Int. Cl.³ F01B *15/00;* **F01L** *17/00*
U.S. Cl. 91—196 **19 Claims**





1. An expansible chamber device, comprising:
a stationary base;
a cylinder block;
an elongated enclosed bore formed within the cylinder block along a central axis;
means mounting said block to said base for rotation of the block relative to the base about said axis;
a piston slidably received within the bore for coaxial reciprocating motion therein, along said axis forming expansible chambers within the bore at opposite ends thereof;
rod means interconnecting said piston and base for preventing rotational movement of the piston about the axis relative to the base;
motion transmitting means connecting the cylinder block and piston for directly relating rotational movement of the cylinder block about the axis and reciprocal movement of the piston along said axis through a defined stroke;
intake means associated with said cylinder block operative in response to rotation of the cylinder block relative to the base for sequentially admitting a fluid into an expansible chamber within the bore; and
exhaust means associated with said cylinder block operative in response to rotation of the cylinder block relative to the base for sequentially directing a fluid out of an expansible chamber within the bore.

4,274,328

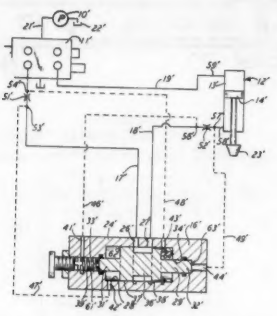
AUTOMATIC HYDRAULIC SHUT-OFF SYSTEM

Carl O. Pedersen, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Continuation of Ser. No. 803,686, Jun. 6, 1977, abandoned, which is a division of Ser. No. 672,133, Mar. 31, 1976, Pat. No. 4,063,489. This application Jul. 16, 1979, Ser. No. 57,660
Int. Cl.³ F15B *13/042;* **F16K** *17/30*
U.S. Cl. 91—445 **4 Claims**

1. In an automatic hydraulic shut-off system having a operator controlled directional hydraulic valve unit, a valve housing, a hydraulic responsive apparatus for applying a mechani-

cal force in response to hydraulic pressure applied to said apparatus, a plurality of hydraulic flow lines connected between said housing and said valve unit and said apparatus, the improvement comprising said valve housing having two opposite end portions and a plurality of fluid ports at each of said housing end portions, two fluid ports being adjacent each other in a side wall of said housing and in flow communication with each other and with two of said flow lines being respectively hydraulically connected between said two fluid ports and said valve unit and said apparatus, a fluid-flow restrictor connected in each of said two of said flow lines for restricting flow therethrough, four other of said flow lines being respectively connected between said two flow lines and said housing at four other of said fluid ports, the connection of said four other of



said flow lines to said two of said flow lines being in pairs which are located on both sides of each of said restrictors, the said lines of said connections in each of said pairs connected to opposite said housing end portions, a valve closure movably disposed in said housing and exposed to and operative on all said fluid ports and being arranged for flow communication between the said two fluid ports, and said valve closure having a fluid-sealing portion operative relative to said two fluid ports and having four oppositely faced surfaces respectively exposed to said four other fluid ports for moving said closure in said housing in response to a fluid pressure difference at said surfaces, to thereby move said closure fluid-sealing portion to a position to fluid seal said two fluid ports when a break occurs in the flow line between said valve unit and said valve housing.

4,274,329

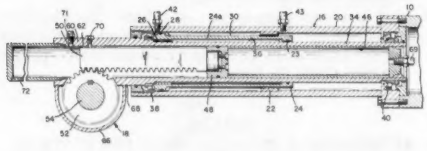
ROTARY ACTUATOR APPARATUS

Paul P. Weyer, 48811 284th S.E., Enumclaw, Wash. 98022

Filed Nov. 13, 1978, Ser. No. 960,044

Int. Cl.[3] F01B *3/08, 21/02*

U.S. Cl. 92—33 **7 Claims**



1. A compound rotary actuator apparatus for a workpiece manipulating robot, boom supported rock drill machine or the like having a member to be articulated and a frame, comprising:

a first rotary actuator having internal helical spline means, a first external cylindrical housing, an internal first output member, and first piston means operable for acting on said spline means to provide rotation of said output member about a first longitudinal axis of said first external cylindrical housing by reciprocation of said first piston means along said axis,

a second rotary actuator coupled to said first rotary actuator and having a second external housing with a longitudinal axis coincident to said first axis, second piston means reciprocating within said second external housing along said longitudinal axis and a second output member rotatable in response to reciprocation of said second piston means about an axis perpendicular to the axis of rotation of said first output member, said second external housing coupled to said first output member for rotation therewith,

means coupling said first external housing to a frame and means coupling said second output member to a member to be articulated whereby reciprocation of said first and second piston means will provide rotation of said articulated member about two right angle axes, said second output member being rotatably mounted in a third external housing, said second external housing being joined to said third external housing without threads by welding whereby the rotation of said first output member, which is directly transferred to said second external housing, will not release from said third external housing but will transmit the rotational torque in either direction to said third external housing.

4,274,330

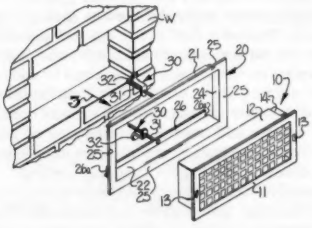
VENTILATOR AND MOUNTING FRAME ASSEMBLY

Alvin E. Witten, and Howard W. Green, both of Gastonia, N.C., assignors to Witten Automatic Vent Company, Inc., Gastonia, N.C.

Filed Jul. 9, 1979, Ser. No. 55,605

Int. Cl.[3] F24F *7/00*

U.S. Cl. 98—37 **17 Claims**

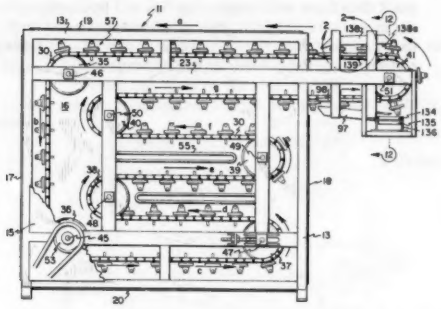


12. A mounting frame for a ventilator constructed for quick and simple installation of the ventilator in a wall of a building from the exterior side of the wall, said frame comprising respective opposing pairs of interconnected generally horizontal and generally vertical walls defining an opening of predetermined size, said frame having an outwardly extending peripheral flange at the front thereof adapted to engage the exterior face of the building wall and having clamping means extending rearwardly of said peripheral flange for engaging the interior face of the wall and clamping the frame in place in the wall, respective abutment means carried by one of said pairs of walls and extending inwardly into said opening and adapted for engaging the rear of a ventilator positioned in the opening to limit rearward movement of the ventilator, and said abutment means being located rearwardly of the other of said pairs of side walls a sufficient distance to permit the ventilator to be slidingly positioned in the opening with the rear of the ventilator engaging said abutment means and with opposite ends of the ventilator located behind said other walls to limit forward movement of the ventilator and thus hold the ventilator in place in the opening.

4,274,331
WAFER BAKING MACHINE

Billy M. Jensen, Sandy; Ronald H. M. Brunner, Salt Lake City, both of Utah, and Lang S. Wong, 875 N. 1500 West, Salt Lake City, Utah 84101, assignors to Lang S. Wong, Salt Lake City, Utah

Filed Jun. 10, 1974, Ser. No. 478,111
Int. Cl.[3] A47J *37/00*; A21B *5/00*
U.S. Cl. 99—373 **13 Claims**



1. In a baking machine including an oven and a single endless conveyor which travels through the oven, the improvement comprising:

a. a plurality of baking units fixedly mounted on said single endless conveyor, each of said baking units including:

(i) an upper platen and an associated lower platen, comprising a pair, between which goods are baked, the face of said upper platen which is directed toward said lower platen being flat; and

(ii) connecting means which connect said upper and lower platens of said pair for movement towards and away from one another while maintaining face-to-face parallelism therebetween, said connecting means normally maintaining said upper and lower platens clamped together during a baking cycle;

(iii) a cupped member fixed on said lower platen to face the said upper platen;

b. opening means mounted to said oven at a selected position to move said associated upper and lower platens apart when said baking units are in an inverted position; and

c. a pusher member mounted to push the baked wafers from said flat face of a said upper platen when said baking units are inverted and said upper and lower platens are parted, said pusher member including:

(i) a body section that is pivotally mounted to said oven and a nose portion that extends from one end of said body section; and

(ii) a roller mounted at the opposite end of said body section; said pusher member being positioned such that, when said associated upper and lower platens are parted, said roller rides onto said flat face of said upper platen and said nose portion engages a baked good lying thereon to push the same from said upper platen.

4,274,332
DIE CHANGING APPARATUS FOR PRESS

Iwao Nakamura, c/o Futaba Denshi Kogyo K.K. 629, Oshiba, Mobara-shi, Chiba-ken, Japan

Filed Apr. 4, 1980, Ser. No. 137,268
Claims priority, application Japan, Apr. 11, 1979, 54-42963
Int. Cl.[3] B30B *15/02*
U.S. Cl. 100—299 **10 Claims**

1. A die changing apparatus for press comprising:

a base having a plurality of holes;

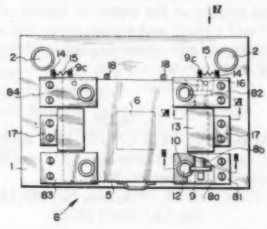
a base plate for mounting a die to be fixed to the surface thereof having guide holes at positions corresponding to the holes of the base;

brackets mounted on the base overhanging over the surface of the base so as to have gaps between the surface of the base and the underside of the brackets for positioning the base plate;

the brackets being provided with holes at the positions corresponding to the guide holes of the base plate and the holes of the base as to be communicated therewith;

eccentric shafts supported by the brackets horizontally extending through the brackets in parallel relationship with the base plate;

the eccentric shafts being provided with eccentric cams and



pinions coaxially mounted thereon for clamping and positioning the base plate with respect to the base;

guide pins being reciprocatable within the holes in the brackets for positioning the base plate with respect to the base to be tightly inserted into the guide holes of the base plate and the holes of the base;

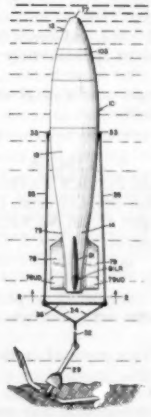
the guide pins being provided with racks engaging with the pinions provided on the eccentric shafts; and

a means for biasing the guide pins in the position of entering into the guide holes of the base plate and the holes of the base.

4,274,333
DEEPWATER TARGET-SEEKING MINES

Glen T. Lampton, Santa Monica, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1959, Ser. No. 862,432
Int. Cl.[3] F42B *22/04, 19/00*
U.S. Cl. 102—418 **5 Claims**



1. A buoyant target-seeking mine comprising, a hollow casing having nose, body, and tail sections, a hydrophone assembly mounted in said nose section, steering elements

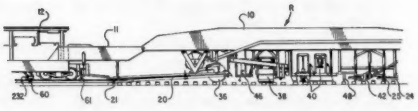
mounted on said tail section, amplifying circuit means connected to said hydrophone assembly, means influenced by said circuit means to move said steering elements in a direction to steer said mine toward a target producing sound above a predetermined amplitude, an orifice in said tail section for the passage of water ballast into and out of said casing, a first independent buoyancy control means for maintaining a predetermined amount of said ballast water in said casing during descent of said mine to anchorage, said ballast water being retained in said casing during said anchorage, a second buoyancy control means under the control of said circuit means for exhausting said ballast water, means for releasing the mine from said anchorage when said sound producing target influences said circuit means whereby said mine is free to rise rapidly to the surface of the water by reason of the increased buoyancy of said casing, and means under the control of said circuit for steering said mine toward said noise-producing target during its rise to the surface.

4,274,334

MACHINE FOR CHANGING RAILS

Raymond R. Lund, West Columbia, S.C., assignor to Canron Corporation, West Columbia, S.C.

Filed Oct. 13, 1978, Ser. No. 951,133
Int. Cl.³ E01B *29/05*
U.S. Cl. 104—2 **35 Claims**



1. A machine for adzing at two laterally spaced locations corresponding to the desired locations of new rails, the upper surfaces of wooden ties of a railway track from which old rails and tie plates have been removed, the machine comprising a main frame having a forward end mounted on first rail engaging means adapted to run on the old rails and a rearward end mounted on second rail engaging means adapted to run on the new rails, a pivotal frame carried on the main frame at a position between and remote from the first and second rail engaging means, two adzers mounted at two laterally spaced locations on the pivotal frame, and means for pivoting the pivotal frame selectively about approximately one adzer location or approximately the other adzer location, whereby both adzers can be positioned substantially perpendicular to the ties even on superelevated track.

4,274,335

MONORAIL POLICE PATROL VEHICLE

Roy Boland, P.O. Box 304, Claymont, Del. 19703

Continuation-in-part of Ser. No. 827,983, Aug. 26, 1977, abandoned. This application Sep. 5, 1979, Ser. No. 72,645
Int. Cl.³ B61B *3/02*
U.S. Cl. 104—93 **6 Claims**

1. Apparatus for transporting people rapidly either along a ground surface or elevated therefrom, comprising:

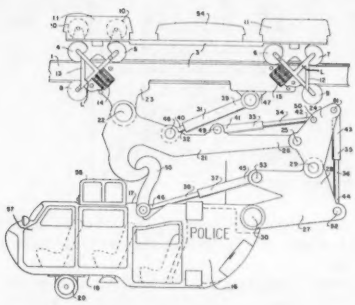
a monorail,

a motorized carriage mounted on the monorail for movement therealong,

said carriage having front and rear sets of rail engaging wheels spaced horizontally from one another, and chassis means extending along the rail to connect said front and rear sets of wheels together,

a gondola disposed below said motorized carriage, said gondola having forward and aft ends and at least one wheel affording movement of the gondola along the ground,

means for raising and lowering said gondola even while said carriage is in motion, including, an elongated fixed-length boom pivotally connected at one end to said chassis and having a free end, an hydraulic cylinder connected to said chassis and said boom adjacent said boom pivot connection for pivoting said boom from a retracted position disposed along the underside of said carriage to an extended position depending substantially vertically downward therefrom, and cooperating link and hydraulic cylinder means carried by the free end of said boom and operatively connected to the aft end of said gondola for raising and lowering the gondola as the boom pivots,



means carried in said gondola for controlling said hydraulic cylinders, and

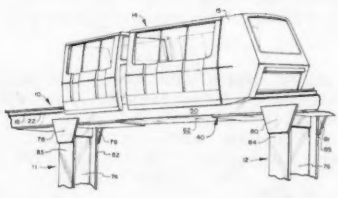
cooperating latch means mounted atop the gondola and depending from the boom for mechanically securing the gondola in its uppermost elevated position, said latch means including a hook depending from said boom adjacent its pivot connection to said chassis and a latch member projecting upwardly from said gondola a spaced distance from the aft end of the gondola, said hook and latch member being shaped to interengage one another when the gondola is in its uppermost elevated position to restrain pivotal movement of the gondola about its aft end and to restrain said gondola from relative movement lengthwise of the boom.

4,274,336

MONORAIL GUIDEWAY ASSEMBLY

Hendrik Pater, 4154 Parkview Dr., Salt Lake City, Utah 84117, and G. Earl Torgersen, Salt Lake City, Utah, assignors to Hendrik Pater, Salt Lake City, Utah

Filed Aug. 11, 1978, Ser. No. 932,828
Int. Cl.³ E01B *25/08*
U.S. Cl. 104—124 **18 Claims**



1. A monorail guideway assembly supported upon at least one column, the guideway assembly comprising:

at least one running surface;

a truss assembly joined to and supporting the running sur-

face, said truss assembly defining a hollow channel beneath the running surface; and

the bottom of said truss assembly at locations immediately adjacent to the at least one support column, comprising a size which exceeds the size of the bottom of the truss at locations between the support columns, so that the variation in stresses applied to the running surface is compensated for while minimizing overall weight.

4,274,337

MODEL LOCOMOTIVES

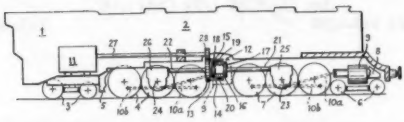
Christopher W. Shaw, Kirkbymoorside, England, assignor to Micro Metalsmiths Limited, North Yorkshire, England

Filed Jul. 2, 1979, Ser. No. 53,730

Claims priority, application United Kingdom, Jul. 5, 1978, 28959/78

Int. Cl.³ B61C *9/30, 15/14;* **B61F** *3/04*

U.S. Cl. 105—99 **6 Claims**



1. In a model of a steam locomotive which has two independent front and rear sets of driving wheels, each set of driving wheels of said model including a plurality of pairs of driving wheels interconnecting by axles, connecting rods interconnecting the individual pairs of driving wheels in each said set, and a single electric motor coupled to axles of both sets of driving wheels for driving said model, the improvement comprising means for permitting relative rotation between the wheels of each said set with respect to the wheels of the other said set and comprising differential gear means including an input wheel and two output gears, output shafts connected to said output gears and extending towards said two sets of driving wheels, respectively, gearbox means coupling each of said output shafts to the axle of one pair of said driving wheels of the associated set, and means coupling said electric motor to said input wheel of said differential gear means, whereby the wheels of each said set can drift in and out of synchronisation with the wheels of the other said set to provide for more realistic operation of the model steam locomotive.

4,274,338

TRANSVERSELY ADJUSTABLE SUSPENSION SYSTEM

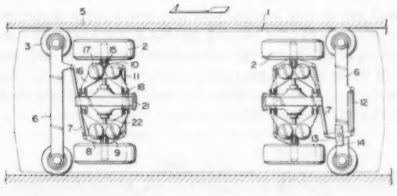
Yukio Uozumi, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Apr. 2, 1979, Ser. No. 26,544

Claims priority, application Japan, Apr. 3, 1978, 53-38967

Int. Cl.³ B61B *13/04;* **B61F** *9/00, 13/00*

U.S. Cl. 105—144 **8 Claims**



1. An automatically guided vehicle comprising a body and rubbertired steerable running wheels, each having an axle, a suspension system including transversely extending upper and lower link arms which are parallel with each other and have equal arm lengths, each of said links having one end connected with the wheel axle through universal joint means at least for steering movement about a vertical axis and a rotative movement about a longitudinal axis and the other end connected at two longitudinally spaced portions with the vehicle body for rotative movement about a second longitudinal axis, at least one of the link arms being connected with the vehicle body at said longitudinally spaced portions for independent transverse adjustments, air spring means disposed between one of the links and the vehicle body for normally maintaining said links substantially horizontally to thereby maintain the associated wheel always vertical.

4,274,339

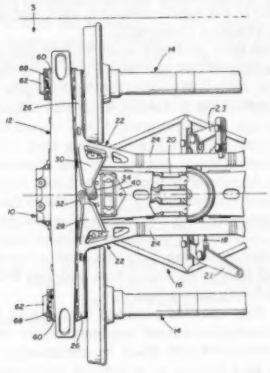
RADIALLY STEERING RAILWAY TRUCK ASSEMBLY

Geoffrey W. Cope, Williamsville, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 29, 1979, Ser. No. 43,199

Int. Cl.³ B61F *3/08, 5/38, 5/52*

U.S. Cl. 105—168 **15 Claims**



1. An improved steering arm assembly for a radially steerable railway car truck having a transversely extending bolster, a side frame mounted at each end portion of the bolster, and a wheel set mounted transversely between oposed ends of the side frames with bearing adapters and resilient bearing adapter pads between the wheel sets and the side frames at each jaw of the side frames; the improved steering arm assembly, comprising:

(a) a pair of generally U-shaped steering arms, with one of said arms being mounted on the truck on the forward side of said bolster and the other of said arms on the rear side of said bolster, with said steering arms each having a transverse segment with an extremity extending from each end portion of said transverse segment wherein end portions of the extremities are attached to bearing adapter means of the associated wheel set and the transverse segment is positioned along side of the bolster;

(b) a connector post extending from the juncture of each said extremity and said transverse segment to a location spaced from said bolster thereby forming pairs of connector posts in substantially vertical alignment with and spaced from each end portion of said bolster; and

(c) linkage means joining each of said pairs of connector posts to maintain said connector posts in a fixed dimension and in a pivotal relation to one another;

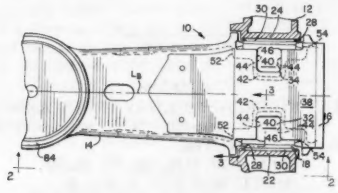
said steering arm assembly being operable upon displacement of one of said wheel sets to a radially disposed orientation to displace the other wheel set to a coordinated corresponding position.

4,274,340

RAILWAY CAR TRUCK FRICTIONAL SNUBBING ARRANGEMENT

Otto W. Neumann, Itasca, and James A. Henkel, Park Forest, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Oct. 15, 1979, Ser. No. 84,669
Int. Cl.³ B61F *5/06, 5/12, 5/24, 5/50*
U.S. Cl. 105—197 DB **2 Claims**



1. In a railroad car truck including a pair of spaced side frames joined by a transversely positioned bolster having ends resiliently carried in a window formed in each said side frame, the improvement therein comprising,

a pair of friction shoe pockets formed in each said end of said bolster, one each of said pair facing to a front and to a rear of said truck, each said pocket having by a pair of spaced friction members each having a double sloped friction surface formed on a downward and outward angle to form an overall concave-like receiving area, and

a set of four friction shoes, one each of said shoes disposed in each of said friction shoe pockets, each said shoe having a pair of spaced double sloped wear surfaces formed on a downward and outward angle to form an overall convex-like seating area for complementary engagement with said bolster pocket receiving area, an area of said contact between said bolster receiving area and said friction shoe seating area being substantial,

wherein said shoe remains centered within said pocket to provide a three-dimensional wedging effect to improve dynamic stability of said truck by maintaining said side frames and said bolster in a squared relationship while each said friction shoe regulates in part vertical movements of said bolster.

2. A railroad car truck having a pair of spaced elongated side frames positioned in a parallel manner, each said side frame formed with a centrally located window defined by a bottom tension member, a top compression member and spaced sidewalls, and an elongated bolster positioned laterally between said side frames with ends resiliently supported by a set of springs carried on the bottom tension member of each side frame window, the improvement in said truck comprising,

friction shoe pockets formed one each on each side of a longitudinal axis of said bolster at said ends of said bolster, each said pocket defined by a bottom member and a top member having a centrally located and outwardly facing recess formed therein, said top member joined to said bottom member by a U-shaped partition aligned with said recess, said partition having downwardly sloped end walls connected with sidewalls of said pocket by spaced friction members, each said friction member having a double sloped friction surface formed on a downward and outward angle, and

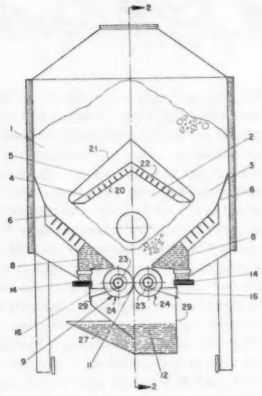
a friction shoe carried one each in said bolster friction shoe pockets, said shoe including a central body portion having a bottom prepared to receive an upper end of a compression spring carried on said pocket bottom member, and a pair of triangular spaced wings each having an end flange, one each of said wings carried on each side of said body member, each said wing having a double sloped wear surface formed on a downward and outward angle, said shoe disposed in said pocket with said friction shoe body portion loosely carried within said U-shaped partition and with each said flange forming a guide in a groove defined by each said pocket friction member and a rib carried on each said pocket sidewall, said spaced wear surfaces of said shoes engaging with said spaced friction surfaces of said pockets with areas of said engagement of said surfaces being substantial to produce a wedging effect to maintain said shoes centered and squared within said bolster pockets respectively, said shoes maintaining said bolster and said side frame in a squared relationship during operation of said truck as vertical movements of said bolster are dampened by a vertical friction surface of each said shoe engaging with a vertical wear plate fastened to each said sidewall of said side frame windows respectively.

4,274,341

COAL GASIFYING BURNER WITH ROTATING GRILL

Huseyin C. Ozaltay, Kucukesat Caddesi, 55/13, Ankara, Turkey

Filed Aug. 13, 1979, Ser. No. 65,877
Claims priority, application Turkey, Dec. 7, 1978, 101848
Int. Cl.³ F23K *1/00;* **C10J** *1/00*
U.S. Cl. 110—229 **7 Claims**



1. A coal gasifying burner comprising a coal storage, a combustion cell positioned beneath said coal storage, narrow gap means with rounded edges through which coal flows continuously from said coal storage to said combustion cell, a roof for said combustion cell separating said combustion cell from said coal storage, an air bearing insulation partition placed on said roof for separating the coal in said coal storage from said roof, sloping side walls made of sheet metal having slopes compatible with coal flow, a nozzle for burning coal gas generated by burning coal in said combustion cell, a jacket surrounding said nozzle, and secondary air means connected to said jacket for cooling said roof and for supporting combustion of coal gas at said burner, whereby gasification is obtained of an abundance of coal located on said sloping side wall around a narrow area where coal combustion takes place, and combustion of the generated gas outside of the burner at said nozzle by secondary air which previously cooled the roof and thus gets heated itself by the cooling process.

4,274,342

APPARATUS FOR CARBONIZING AN AGRICULTURAL PRODUCT

William K. Nider, 32 Sunnyside La., Orinda, Calif. 94563

Filed Jul. 16, 1979, Ser. No. 57,560
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—246 **9 Claims**

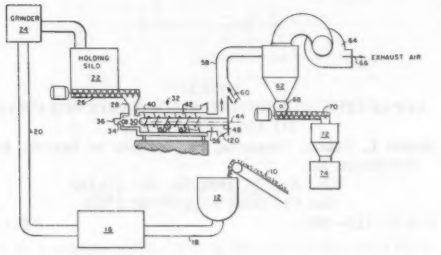
1. An apparatus for carbonizing an agricultural product comprising

means defining a rotatable cylindrical vessel having an inlet end and an outlet end and having a horizontal axis of rotation coincident with the cylindrical axis of said vessel,

means for controlling the volume flow of air from said inlet end to said outlet end,

first means attached to the inside surface of said rotatable cylindrical vessel for creating a vortex of said air passing through said rotatable cylindrical vessel,

a non-rotatable support member extending the length of said rotatable cylindrical vessel,



second means attached to said non-rotatable support member for creating a vortex of said air passing through said rotatable cylindrical vessel,

means for conveying said agricultural product to said inlet end of said cylindrical vessel,

means proximate said inlet end for igniting said agricultural product and creating hot gases to volatilize various constituents of said agricultural product, and

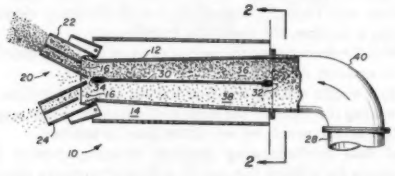
means for conveying said agricultural product away form said outlet end of said rotatable cylindrical vessel.

4,274,343

LOW LOAD COAL NOZZLE

Angelos Kokkinos, New Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 13, 1979, Ser. No. 29,606
Int. Cl.[3] F23K *3/02*
U.S. Cl. 110—263 **7 Claims**



1. In a pulverized coal-fired steam generator having a furnace, a pulverizer for pulverizing coal, a main fuel pipe for conveying a mixture of primary air and pulverized coal from the pulverizer to the furnace, and a main fuel pipe outlet elbow disposed at the outlet end of the main fuel pipe; an improved fuel-air admission assembly having a coal delivery pipe having an inlet end for receiving the coal-air mixture from the main fuel pipe outlet elbow and an outlet end for discharging the coal-air mixture into the furnace, a first coal nozzle pivotally mounted to the outlet end of said coal delivery pipe so as to tilt about an axis transverse to the longitudinal axis of said coal delivery pipe, and a second coal nozzle pivotally mounted to the outlet end of said coal delivery pipe so as to tilt about an axis transverse to the longitudinal axis of said coal delivery pipe; wherein the improvement comprises:

means disposed within said coal delivery pipe for separating the coal-air mixture received from the main fuel pipe outlet elbow into a higher coal-air ratio portion and a lower coal-air ratio portion, and maintaining the separation between the higher and lower coal-air ratio portions for a substantial portion of the length of said coal delivery pipe so that the higher coal-air ratio portion is directed into the furnace through said first coal nozzle and the lower coal-air ratio portion is directed into the furnace through said second coal nozzle.

5. A method of operating a pulverized coal-fired furnace wherein a mixture of pulverized coal and primary air is discharged into the furnace as a higher coal-air ratio portion and a lower coal-air ratio portion comprising:

a. turning the pulverized coal and primary air mixture through an elbow so that the pulverized coal is concentrated by centrifugal forces along the outer radius of the elbow thereby forming a higher coal-air ratio portion and a lower coal-air ratio portion within the pulverized coal and primary air mixture;

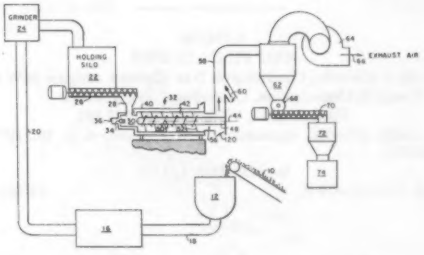
b. directing said higher coal-air ratio portion into and through a first flow pathway extending from the elbow to the furnace, and directing said lower coal-air ratio portion into and through a second flow pathway extending from the elbow to the furnace, the first and second flow pathways forming separate pathways to the furnace, whereby the coal-air ratios obtained in turning the elbow are maintained until said higher and lower coal-air ratio portions are independently directed into the furnace.

4,274,344

PROCESS FOR CARBONIZING AN AGRICULTURAL PRODUCT

William K. Nider, 32 Sunnyside La., Orinda, Calif. 94563

Filed Jul. 16, 1979, Ser. No. 57,558
Int. Cl.[3] F23G *5/06*
U.S. Cl. 110—346 **9 Claims**



1. In a process for treating an agricultural product having a high silica content comprising the steps of

supplying said agricultural product to a combustion zone,

supplying hot gasses and combustion air to said combustion zone,

dispersing said agricultural product in said hot gases and combustion air for controlled burning of said agricultural product at a temperature below that which causes fusion of said skeletal silica in said agricultural product but sufficient to cause evolution and combustion of volatile constituents and organic matter in said agricultural product,

the improvement comprising

arresting the combustion process of said agricultural product after evolution of said volatile constituents and organic matter and prior to oxidation of carbon constituents remaining in said agricultural product.

4,274,345

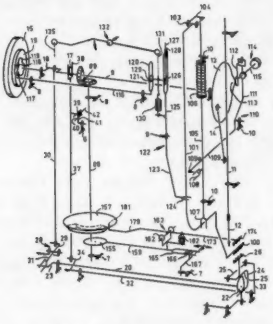
MACHINE FOR SEWING TOGETHER WORKPIECE PARTS HAVING EDGES OF EQUAL OR UNEQUAL LENGTH BY MEANS OF A BEAD SEAM

Gerhard Schneider; Rolf Ludwig, and Jochen Fischer, all of Bielefeld, Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,417

Int. Cl.[3] **D05B** *15/00, 35/10, 27/08, 27/06*

U.S. Cl. 112—51 **4 Claims**



1. A sewing machine for sewing an edge of a first layer of a workpiece to a second workpiece layer having a protruding edge with respect to said edge of said first layer comprising: stitch forming means including a needle and a looptaker mechanism; workpiece feeding means; a workpiece press pad; an edge guide for said first layer and said second layer; and means for forming said protruding edge of said second layer to a bead seam, said forming means comprising a forming edge at said edge guide for prefolding said protruding edge of said second layer and a driven folding means operating in an area in front of said needle for folding said prefolded protruding edge about the edge of said first layer and imparting work feeding motions to said protruding edge of said second layer in the direction to said needle.

4,274,346

CUT PILE LOOPER

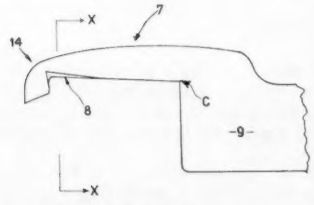
Garth A. Carnaby, Christchurch, New Zealand, assignor to Wool Research Organization, Canterbury, New Zealand

Filed Aug. 10, 1978, Ser. No. 932,661

Claims priority, application New Zealand, Aug. 10, 1977, 184895

Int. Cl.[3] **D05C** *15/22*

U.S. Cl. 112—79 R **2 Claims**



1. In a tufting machine for producing cut-pile, the machine including a looper and an independently operable cutting blade movable relative thereto for effecting a cutting of yarn loops, the looper having a base portion, a forward hook-shaped end and a yarn engaging portion around which a loop of yarn is formed extending between said base portion and said forward end, said yarn engaging portion having a cutting edge formed along the entire length thereof so that the cutting blade can periodically cooperate therewith to cut at least one of a series of accumulated loops collected on said yarn engaging portion, the improvement wherein said yarn engaging portion has smooth contours adjacent only said forward end of the looper to thereby eliminate said cutting edge thereat, the remainder of said length of said yarn engaging position having said cutting edge formed thereon for effecting the cutting upon the cooperation with said blade of said at least one of the series of accumulated loops, whereby any catching, cutting or breaking of the loop of yarn before being periodically cut by the cutter blade is substantially avoided.

4,274,347

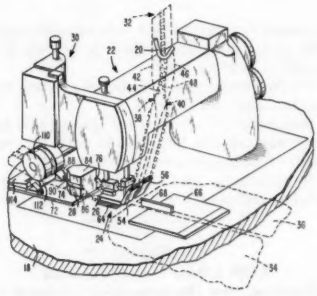
APPARATUS FOR SEWING SLIDE FASTENER CHAIN TO ARTICLE PANELS

Robert L. Rohrer, Meadville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Aug. 18, 1980, Ser. No. 179,199

Int. Cl.[3] **D05B** *3/12, 29/00, 27/10*

U.S. Cl. 112—104 **3 Claims**



1. An apparatus for sewing a slide fastener chain to a pair of article panels wherein the slide fastener chain has a pair of tapes and a pair of interlocking rows of fastening elements mounted on inner edges of the respective tapes, each tape together with each corresponding row of fastening elements defining a stringer, the apparatus comprising

means for disengaging the pair of rows of fastening elements to separate the stringers,

a dual needle sewing machine having a sewing station for sewing the tapes of the separated stringers to the respective article panels by respective lines of stitches,

said dual needle sewing machine including presser foot means for guiding the pair of separated stringers through the sewing station with the inner tape edges and the fastening elements being turned to the outside and with the outer tape edges being turned to the inside and aligned relative to inner edges of the respective article panels,

a turning and pull-up device positioned behind the sewing station,

said turning and pull-up device including turning means for turning the separated stringers so that the inner tape edges and the fastening elements are reoriented to the inside and for folding inner edge portions of the article panels along the lines of stitches,

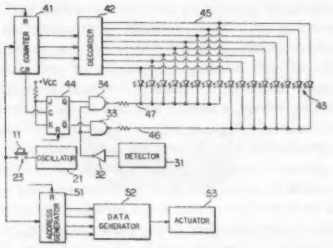
said turning and pull-up device also including pull-up means for reinterlocking the fastening elements of the stringers after the separated stringers have been turned, and

a chain pulling mechanism operated by the sewing machine for pulling the slide fastener chain with attached and folded article panels from the turning and pull-up device.

4,274,348
MULTIPLE PATTERN SEWING MACHINE

Masataka Kato, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 16, 1979, Ser. No. 94,880
Claims priority, application Japan, Feb. 10, 1979, 54-14829
Int. Cl.[3] D05B *3/02;* G08B *5/36*
U.S. Cl. 112—158 E 3 Claims



1. In a multiple pattern sewing machine having stitch forming instrumentalities, manually operable means for selecting a desired stitch pattern from among a plurality of predetermined stitch patterns, pattern displaying means on the front of the machine for indicating each of said stitch patterns, and supplying means responsive to the operation of said manually operable means for supplying an indication signal to said pattern displaying means so as to indicate the selected stitch pattern, the improvement comprising:

(a) detecting means for generating a trouble signal upon occurrence of trouble in the machine which prevents an appropriate sewing operation; and

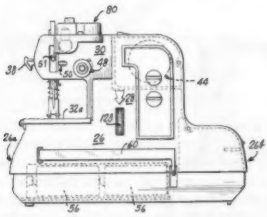
(b) interrupting means responsive to the trouble signal for interrupting feed of the indication signal to said pattern displaying means upon occurrence of trouble,

whereby indication of all said stitch patterns disappears from said pattern displaying means thereby warning an operator of occurrence of the trouble.

4,274,349
TOY ELECTRIC SEWING MACHINE

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Apr. 5, 1979, Ser. No. 27,358
Int. Cl.[3] D05B *1/02*
U.S. Cl. 112—169 4 Claims



1. A toy electric sewing machine comprising:

a housing formed of a left and a right molded plastic half shell joined at seams running generally front to back, said housing including a base having a front portion, a column extending up from a part of the base which is back of its front portion and a head extending forwardly from the top part of the column and overhanging said front portion of the base;

a throat plate covering the top of said front portion of the base and having a top defining a working surface;

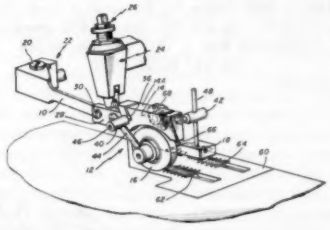
a presser foot rod extending through the head and down from it and having a presser foot at its bottom end, said presser foot and rod being biased toward a sewing position in which the presser foot presses against the working surface but being movable up to and being lockable in an up position in which the presser foot clears the working surface by a clearance sufficient to freely insert working fabric but not the fingers of a user between the working surface and the presser foot;

a stitch forming mechanism including a needle rod mounted in the head for reciprocating up and down in the head and a needle depending from the needle rod and movable therewith in said reciprocating movement up and away from the working surface and down and into the working surface, means for feeding thread to the needle, loop forming means movable cooperatively with the needle to form stitch loops therewith, means for feeding working fabric along the working surface when the presser foot is in its sewing position, and means for driving the needle, the loop forming means and the feeding means in synchronism with each other to thereby move the working fabric along the working surface while forming stitches thereon, said driving means including an electric motor mounted inside the housing, gearing means also mounted inside the housing for transmitting power from the motor to the needle, loop forming means and feeding means and an electric power supply located at least partly underneath the column and the throat plate, and means for selectively connecting electrically the motor to the power supply to thereby selectively energize the motor and operate the sewing machine.

4,274,350
SEWING MACHINE ATTACHMENT

Merrill H. Walter, Natick, Mass., and Stanley Jacobs, Ft. Lauderdale, Fla., assignors to Beatrice Foods Company, Chicago, Ill.

Filed Feb. 4, 1980, Ser. No. 118,488
Int. Cl.[3] D05B *29/00*
U.S. Cl. 112—235 10 Claims



1. A sewing machine attachment for pressing a fabric to be stitched against feed dogs, comprising;

an arm adapted to be supported at one end and carrying a wheel assembly frame at the other end,

a wheel mounted on the assembly frame for rotation about a substantially horizontal axis and having a yieldable material-engaging surface adapted to overlie a feed dog of the machine;

presser foot means mounted on the assembly frame beside the wheel and having a lower pressing surface disposed closely adjacent to the plane of the material engaging surface of the wheel and adapted to overlie a second feed dog of the machine,

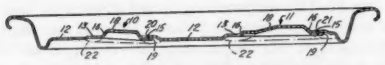
and means for adjusting the height of the wheel and the presser foot means on the assembly frame.

4,274,351

CAN END CLOSURE

Alfred H. Boardman, Hamilton, Canada, assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 55,897, Jul. 9, 1979, Pat. No. 4,213,538.
This application Feb. 5, 1980, Ser. No. 118,680
Int. Cl.³ B21D *51/46*
U.S. Cl. 113—1 F **1 Claim**



1. A method of forming a closure including inwardly displaceable tap portions for venting and pouring including the following steps:

forming a generally circular container end having an outer rim adapted for double seaming to a container and a substantially flat circular central panel with outer and inner surfaces,

reforming said central panel to include outwardly displaced hat-shaped sections of circular configuration with one of said sections being larger in diameter than the other;

scoring along approximately one-half of the perimeter of circles defining each of said sections said score extending from an area which remains unscored and unsevered as a hinge;

leaving a residual of unscored material beneath said score and co-extensive thereto for supporting said inwardly displaceable tab portions against undesired opening;

severing the remaining semi-circular circumference of said sections to form a curvilinear cut line between the ends of said scoring away from said hinge;

coining margins of each said severed hat section in order to extend same beneath the adjacent central panel from which same was severed, and

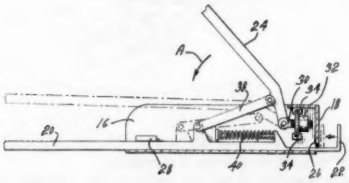
sealing the cut edge of said severed inwardly displaceable tab portions with a polymeric material applied to the inner part of said central panel and said margins.

4,274,352

PORTABLE CRIMPING TOOL FOR ATTACHMENT OF SHEET METAL PLATES TO A FRAME

Emilien Hamel, 8602 Tellier St., Montreal, Canada (H1L 3A7)

Continuation of Ser. No. 866,769, Jan. 3, 1978, abandoned. This application Aug. 7, 1979, Ser. No. 64,568
Int. Cl.³ B21D *19/10*
U.S. Cl. 113—57 **1 Claim**



1. A portable manually operated crimping tool for attachment of a sheet metal plate to a frame comprising:

(a) an elongated housing of U-shaped cross-section having a forward end and a rear end and formed of a bottom wall and spaced side walls and having an integrally-formed pressure member closing the forward end thereof, the rear end of said housing being open;

(b) an elongated force member having a front portion slidably mounted and guided along the bottom wall of said housing longitudinally of the latter, said elongated force member having a front end carrying an integral 90-degree finger-like element located outside the forward end of said housing, facing said pressure member and adapted to engage the edge of the sheet metal plate inserted between said pressure member and said finger like element, said force member having a back portion protruding from the rear end of said housing and of a length such as to be adapted to be grasped by an operator's hand;

(c) means for operating said force member between an open position and a closed position, wherein the edge of the sheet metal plate is forced toward the pressure member by the pressure exerted by the force member, said means for operating said force member comprising an indexing wheel rotatably mounted in opposite slots made in the side walls of said housing rearwardly of and close to said pressure member, a threaded eye bolt screwed into said indexing wheel, whereby rotation of said indexing wheel relative to said housing adjusts the position of said eye bolt longitudinally of said housing, a manually-operated handle pivotally connected to said eye bolt at its inner end and pivotable between said side walls toward and away from said back portion of said force member, between a closed position corresponding to the closed position of said force member and in which said handle is substantially parallel to and co-extensive with said force member, and an open position corresponding to the open position of said force member and in which said handle makes an angle with said force member, an arm having a front end pivoted on said handle at a point nearer the inner end than the outer end of said handle, said arm having its rear end pivotally connected to said force member at a point rearwardly spaced from the pivotal connection of said handle to said eye bolt, said handle and said arm forming a toggle lever system; and

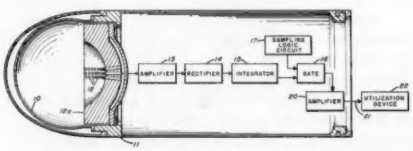
(d) compression spring means disposed between and interconnecting said force member and said housing for biasing said force member to its open position.

4,274,353

ACOUSTIC IMAGING SYSTEM FOR WIRE GUIDED TORPEDO

Rene N. Foss, Seattle, and Sidney Levine, Bothell, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1967, Ser. No. 694,025
Int. Cl.³ F42B *19/10*; **F41G** *7/02*
U.S. Cl. 114—21 A **7 Claims**



1. A target detector for use with a torpedo comprising:

means mounted in the nose of the torpedo for receiving acoustic energy;

means coupled to said receiving means for converting the acoustic energy into D.C. potential;

means connected to said converting means for sampling the D.C. potential;

utilization means for displaying the sample D.C. potential; and

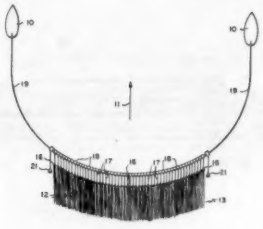
means connecting the sampling means with the utilization means for transmitting the D.C. potential to the utilization means and for receiving guidance signals back from said utilization means to the torpedo.

4,274,354

PRESSURE MINE SWEEPING

Louis F. Jones, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1963, Ser. No. 293,226
Int. Cl.[3] B63B *21/66*; F42B *22/42*
U.S. Cl. 114—244 1 Claim



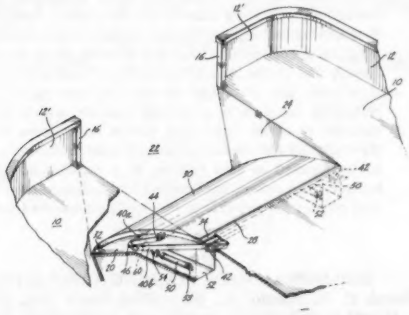
1. In a device for sweeping a pressure ground mine, the combination of an elongated tow cable adapted to be towed laterally at a substantially fixed distance above and parallel to the bottom of a seaway, a mop-like array of lines having their proximal ends secured to said tow cable and having the major portion of length, including their trailing ends, dragging on the adjacent to the bottom of the seaway, said lines being individually provided with bristly thrums.

4,274,355

CONVERTIBLE BULWARK AND RAMP SYSTEM FOR MARINE VESSELS

George G. Fulton, 8514 46th St. W., Tacoma, Wash. 98466

Filed May 6, 1980, Ser. No. 146,477
Int. Cl.[3] B63B *35/18*
U.S. Cl. 114—255 7 Claims



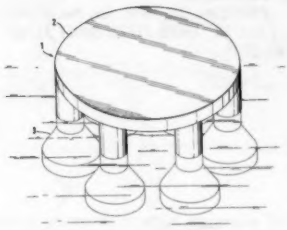
1. In a marine vessel, the combination comprising a hull-bulwark panel having a generally horizontal lower edge hinged in the hull below deck level to permit swinging said panel between an upright bulwark-forming position projecting above deck level and a sloping ramp-forming position projecting inwardly of the hull and upwardly at an incline substantially to deck level, a foldable multi-part deck-forming panel having substantially parallel opposite edges, a first such edge hingedly connected to the bulwark panel at an intermediate height level on the latter and a second such edge hingedly mounted on the vessel to swing vertically on an axis that is substantially at deck level, parallel to and spaced inwardly from the bulwark panel's hinge axis, said deck-forming panel being unfolded with its parts coextending in substantially planar relationship at deck level with the hull-bulwark panel in its upright bulwark-forming position and being stowed with its parts folded one over another beneath the hull-bulwark panel in its ramp-forming position, and operating means to move the panels between such positions.

4,274,356

SEMI-SUBMERSIBLE FLOATING STRUCTURE

Klemens Finsterwalder, Mörlbach, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1978, Ser. No. 923,986
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731788
Int. Cl.[3] B63B *35/44*
U.S. Cl. 114—265 7 Claims



1. A semi-submersible floating structure including a storage space for liquids, such as crude oil, liquid gas and the like, comprising a generally horizontally arranged platform formed of concrete, a plurality of laterally spaced buoyant bodies secured to and extending downwardly from said platform, each said buoyant body comprising an upper part having an upper end and a lower end spaced downwardly from the upper end with the upper end secured to said platform and with the upper part extending downwardly from said platform and a lower part secured to the lower end of said upper part and extending downwardly therefrom, said upper part comprising a tubular column, wherein the improvement comprises that said lower part comprises a closed container formed of one of reinforced concrete and prestressed concrete and having a vertically extending axis with the outer surface thereof shaped as a generatrix of a body of rotation with at least a part thereof being curved, said tubular column secured to said platform by a bending-resistant connection, said platform is a plate shaped member formed of one of reinforced concrete and prestressed concrete and said tubular column being closed off at the upper and lower ends thereof and forming therein a hollow space for use as a tank, such as for ballast water, said lower part has a top end and a bottom end spaced apart in the vertical direction, the open horizontal cross-sectional area within said lower part being greater for at least a major portion of the height thereof than the open cross-sectional area within said tubular column, the generatrix forming the outer surface of said lower part extends rectilinearly outwardly ad downwardly relative to the axis of said lower part to a horizontal plane intermediate the top and bottom ends and continues from the intermediate plane along a curvilinear path to the bottom end of said lower part with the curvilinear portion of the generatrix extending inwardly to the bottom end, a vertically extending annular wall laterally encloses at least some of said buoyant bodies, the upper end of said annular wall being connected to the rectilinear portion of the outer surface of the said lower part and the lower end of said annular wall extending downwardly at least to a horizontal plane including the bottom end of said lower part, said annular wall being spaced radially outwardly from said lower part below the connection of the upper end of said annular wall to said lower part and the inner surface of said annular wall and the outer surface of said lower part forming an annular chamber therebetween closed at the upper end by

the connection of said annular wall to said lower part and open at the lower end thereof.

4,274,357

POWER OPERATED SURFBOARD

Edward S. Dawson, St. Paul, Minn., assignor to Surf-Jet Corporation, St. Paul, Minn.

Filed Nov. 26, 1979, Ser. No. 97,412
Int. Cl.[3] B63B *35/72*; B63H *11/02*
U.S. Cl. 114—270 12 Claims

1. A power operated surfboard with a body having a lower surface designed to move readily through the water and an upper surface which is relatively flat over the forward portion thereof to enable a rider to stand on the surfboard, the body having a floor and a raised rear hollow portion above said floor and containing an engine compartment therein,

an impeller housing rigidly secured to and resting within the raised rear hollow portion of said body below said engine compartment, with a water intake passage extending through the floor of the body and a water exhaust passage extending rearwardly from the rear hollow portion,

an impeller in said housing mounted for rotation about a vertical axis,

an internal combustion engine disposed in said engine compartment above said impeller housing, means securing said internal combustion engine and said impeller housing in rigid relationship to each other, said engine having a vertical output shaft connected to the drive shaft of the impeller for driving the same about its vertical axis, said internal combustion engine further having a cooling jacket and an exhaust passage,

an exhaust gas housing surrounding said impeller housing and having the walls thereof substantially spaced from the impeller housing to form a substantial gas chamber around said impeller housing, said exhaust gas housing being secured to said impeller housing in a substantially gastight manner, said gas chamber having an inlet opening communicating in a substantially gastight relation with the exhaust passage of the engine and having an outlet opening,

and discharge means disposed adjacent the floor of the surfboard and connected to the outlet opening of the exhaust gas housing for discharging the exhaust gas rearwardly beneath the floor of the surfboard,

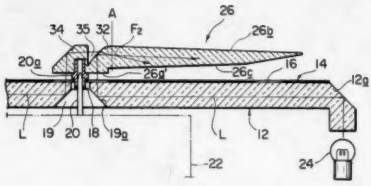
said exhaust gas chamber acting to provide a gas cushion therein to retard the entrance of water through said discharge means into the exhaust passage of the engine when the surfboard is not being operated.

4,274,358

ILLUMINATED INDICATOR GAUGE

Kenji Nakamura, Yokosuka; Masao Ishikawa, Yokohama, and Akio Ajimine, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 8, 1979, Ser. No. 46,616
Claims priority, application Japan, Jun. 26, 1978, 53-86694[U]
Int. Cl.[3] G01D *11/28*
U.S. Cl. 116—288 10 Claims



1. An illuminated indicator gauge comprising:

a dial board of transparent material having a hole formed therethrough;

a spindle passing through said hole;

a pointer of transparent material having an indicating section and a hub section connected to said spindle to move over a front face of said dial board in response to rotation of said spindle about its axis;

light sources producing light rays which are to be transmitted entirely within said dial board in directions parallel with said front face of the dial board toward said hole;

light reflecting means for reflecting light rays, which have come to said hole through said dial board from said light sources, toward the hub section of said pointer; and

first and second light reflecting surfaces formed on said hub section of said pointer at opposite portions with respect to the axis of said spindle for reflecting light rays, which have come thereto from said light reflecting means, toward an indicating section of said pointer, one of said first and second light reflecting surfaces being formed by a recess in that part of said hub section adjacent to said spindle and to the indicating section of said pointer,

and wherein the other one of said first and second light reflecting surfaces is a curved surface which is constructed to allow light rays, which have come thereto through said hub section from said light reflecting means, to be focused in said pointer at a preselected portion between said curved surface and said indicating section of said pointer for providing uniform illumination thereof.

4,274,359

BIOLOGICAL SLIDE STAINING APPARATUS

Joseph P. Di Maggio, Jr., Bergenfield; Henry Eng, Clifton; Donald A. Ball, Warren, and Kenneth J. Walenciak, Wayne, all of N.J., assignors to A.J.P. Scientific, Inc., Clifton, N.J.

Filed Apr. 19, 1978, Ser. No. 897,884
Int. Cl.[2] B05C *11/12, 13/02*
U.S. Cl. 118—56 9 Claims

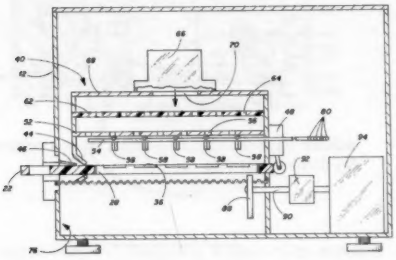
1. An apparatus for the staining of a plurality of biological slides which comprises:

a slide support tray adapted to hold a plurality of slides in parallel position adjacent each other,

a support tray rack assembly adapted to slidably receive said support tray, said rack assembly including a stain composition dispensing assembly providing a plurality of dispensing spigots, said spigots mounted on said rack assembly in overhead relation to said support tray when said support tray is fully received within said rack assembly, and

means for removing excess stain composition and drying said slides,

wherein said support tray is adapted for removable insertion and securement within said rack assembly and comprises a generally rectangular outer tray frame defining a central rectangular aperture therein, a rectangular slide shelf adapted to nest within said aperture and hingably associated with said aperture along at least one side thereof, a plurality of seats defined within said shelf for the parallel disposition thereon of said slides, and said slide shelf is adapted to pivot in relation to said frame in a plane transverse to the direction of insertion of said slide support tray into said rack assembly.



4,274,360

APPARATUS FOR REGENERATING USED FOUNDRY SAND

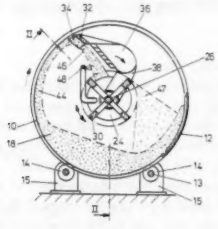
Franz Hofmann, Neuhausen, and Franz Satmer, Schaffhausen, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Switzerland

Filed Apr. 4, 1979, Ser. No. 26,891

Claims priority, application Switzerland, Apr. 14, 1978, 4011/78

Int. Cl.³ B05C *5/00*

U.S. Cl. 118—303 **3 Claims**



1. An apparatus for the regeneration treatment of used predominantly clay-bonded foundry sand for use instead of new sand comprising

a drum for receiving a quantity of used sand for processing;

means for mounting said drum for rotation about a horizontal axis;

rotating impact tool means mounted within said drum for repeatedly contacting and accelerating sand dropping from an upper portion of the interior of said drum; and

pneumatic dust removal means mounted within said drum adjacent the path of dropping sand between said drum and said impact tool means, said removal means including conduit means extending out of the drum for removing the fine material therefrom.

4,274,361

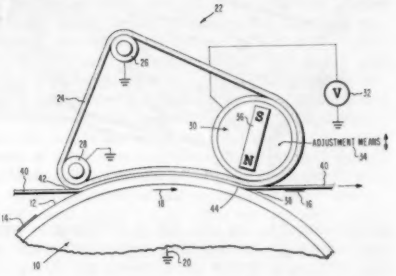
ELECTROSTATIC AND MAGNETIC TRANSFER ENHANCING APPARATUS FOR CONDUCTING AND MAGNETICALLY ATTRACTING TONER

John R. Sanders, Maitland; Richard L. Poythress, Longwood; Richard E. Shultz, Maitland; William F. Buholtz, and Richard C. Fedder, both of Longwood, all of Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 2, 1979, Ser. No. 90,743

Int. Cl.³ G03G *15/08*

U.S. Cl. 118—653 **8 Claims**



1. Electrostatic-magnetic transfer apparatus for automatically controllably transferring an electrostatic toned image from a dielectric surface to a secondary substrate comprising,

a movable member having a dielectric surface thereon, said movable member being at ground potential and said surface provided with an electronically conductive, electrostatically toned image,

endless semi-conductive means arranged adjacent to said dielectric surface,

a secondary substrate movable with said dielectric surface and said semi-conductive means,

means operably associated with said semi-conductive means for applying suitable tension to said means and for configuring said means to said dielectric surface,

cylindrical movable means disposed within said endless semi-conductive means including means for applying an electrical potential thereto, and

magnetic means disposed internally of said movable means having a fixed magnetic polar orientation relative to the periphery of said dielectric surface providing a potential transfer point perpendicular to said dielectric surface such that the magnetic lines of force from said magnetic means are in an aiding direction relative to the electrostatic forces on said dielectric surface causing said electronically conductive toner to adhere to said secondary substrate at the potential transfer point in a dense, well defined image pattern without scattering characteristic of the image pattern previously carried by said dielectric surface.

4,274,362

MAGNETIC BRUSH MIXING AUGERS

Christian A. Beck, Ridgefield; Walter J. Jurkowski, Fairfield, and Charles E. Pegg, Danbury, all of Conn., assignors to Pitney Bowes, Inc., Stamford, Conn.

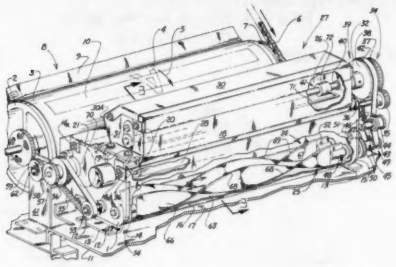
Filed Dec. 5, 1979, Ser. No. 100,577

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—657 **1 Claim**

1. In a developing apparatus for use in an electrostatic copying machine, the developing apparatus having a sump for holding two-component developing material consisting of a marking constituent and a magnetic carrier constituent, a magnetic applicator means rotatably mounted in the sump for withdrawing developing material from the sump and conveying it past a photoconductive member having an electrostatic image therein so as to deposit a quantity of the marking constituent on the electrostatic image to render it visible, an elongate

mixing member having opposed flat surfaces rotatably mounted in the sump for continuously mixing together the marking and carrier constituents of the developing material, the mixing member being formed from an elongate strip of rigid material which is twisted to form a helix, and means for rotating the mixing member, the improvement comprising said



mixing member having (a) a helical configuration which comprises said mixing member being twisted between its end so as to have one convolution therebetween and (b) an axial edge configuration which comprises an arcuate surface portion extending between the opposed flat surfaces of said mixing member.

4,274,363

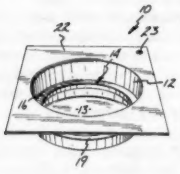
WHELPER STRUCTURE

Barbara A. Root, 4194 W. 44th St., Edina, Minn. 55424

Filed Jan. 9, 1980, Ser. No. 110,783

Int. Cl.[3] A01K *29/00*

U.S. Cl. 119—1 **24 Claims**



18. A structure for use by a female animal and her offspring comprising: a base having an outer annular peripheral edge, an upright annular side wall joined to the outer annular peripheral edge of the base, said base and side wall providing a generally cylindrical space having an open top, and continuous rail means attached to said side wall above the base and projected into the space to protect the offspring from the female animal, said rail means having top and bottom annular portions and an inside annular portion joined to the top and bottom annular portions, said inside annular portion being spaced inwardly from the side wall.

4,274,364

INCUBATION METHOD

Dean A. Forseth, Corvallis, Oreg., assignor to Hensway, Inc., Corvallis, Oreg.

Filed Dec. 26, 1979, Ser. No. 107,497

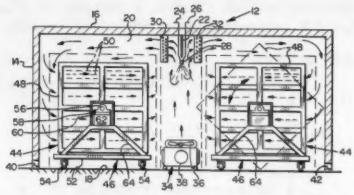
Int. Cl.[3] A01K *41/00, 41/04*

U.S. Cl. 119—35 **7 Claims**

1. In the incubation of eggs where eggs are stored under a controlled atmosphere, the method comprising:

during the incubating of the eggs periodically making weight indicative measurements of the dry-down which has occurred in the eggs, and

adjusting the relative humidity of the atmosphere under which the eggs are stored to produce a change in the rate of dry-down when the weight indicative measurements



indicate the dry-down rate differs from a predetermined dry-down target rate.

4,274,365

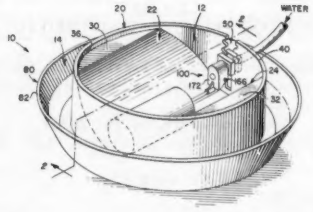
AUTOMATIC WATERING DEVICE

William H. Peters, R.R. #3, Bryan, Ohio 43506

Filed May 14, 1980, Ser. No. 149,575

Int. Cl.[3] A01K *7/00*

U.S. Cl. 119—78 **10 Claims**



1. A device for automatically providing controlled amounts of clean, fresh drinking water to livestock, and the like, comprising:

a basin;

a trough attached to said basin;

a partition separating said basin and said trough;

a slot defined in said partition, said slot establishing fluid communication between said basin and said trough and having side walls which each include a first undulating portion and a second straight portion;

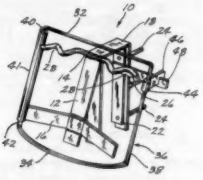
water supply means fluidly connected to said basin;

flow control means fluidly interposed between said water supply means and said basin to control the flow of liquid into said basin from said water supply means, said flow control means including a body movably mounted in said slot and having a fluid passage defined therethrough, a housing pivotally mounted on said body in said basin, a stopper mounted on said housing to occlude said fluid passage when a water level in said basin reaches a desired level, and a float attached to said housing and located within said basin for sensing the liquid level in said basin and for moving said stopper over said fluid passage to prevent further liquid from entering said basin via said passage when the liquid level in said basin reaches a predetermined level and for moving said stopper away from said fluid passage when the liquid level in said basin drops below a predetermined level to permit replenishing of the water in said basin and said trough.

4,274,366
PIG RESTRAINING DEVICE

Kenneth L. Adam, 1472 Helser Hall, Ames, Iowa 50010

Filed Feb. 19, 1980, Ser. No. 122,569
Int. Cl.[3] A61D *3/00*; A01K *29/00*
U.S. Cl. 119—98 10 Claims

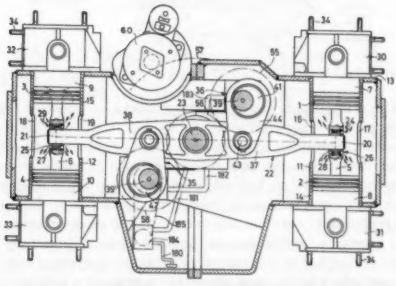


1. An animal restraint, comprising a main body including means for the mounting thereof on a support elevated above the ground, said body including upper pocket-like means spaced apart laterally for receiving the hocks of the hind legs of the animal, first gripping means carried by the body for movement between a closed position cooperative with the pocket means for grasping the hocks to suspend the animal in a head down, belly front position and an open position for receiving and releasing the hocks, said body further including second means spaced below the first means and providing a forwardly facing saddle structure for receiving the animal's back, and second gripping means carried by the body for movement between a closed position overlying the animal's belly and cooperative with the saddle structure to confine the animal and an open position for receiving and releasing the animal, said first and second gripping means being interconnected for movement in unison relative to the body.

4,274,367
RECIPROCATING PISTON BEAM ENGINE

Alfred Gerber, Susenbergstrasse 191, Zürich, Switzerland, and Francesco Sparro, Les Tuileries de Grandson, Switzerland, assignors to Alfred Gerber, Zürich, Switzerland

Filed May 9, 1978, Ser. No. 904,242
Claims priority, application Switzerland, May 11, 1977, 5913/77; May 11, 1977, 5914/77; Jul. 14, 1977, 8733/77
Int. Cl.[3] F02B *75/26*
U.S. Cl. 123—52 A 23 Claims

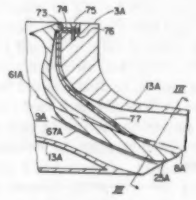


1. A reciprocating combustion engine including at least one engine unit comprising: at least two cylinder assemblies each defining a generally centrally located rectilinear longitudinal axis, said cylinder assemblies being located spaced apart alongside each other with said longitudinal axes extending generally parallel to each other, each of said cylinder assemblies comprising housing means defining a pair of coaxial cylinders of generally equivalent size; a first and a second pair of pistons operatively arranged, respectively, in each of said cylinder assemblies, with each one of the pistons of said piston pairs being operatively associated with one of each of said cylinders; a longitudinal beam having a first and a second end; central support means pivotally supporting said beam about a pivot axis located equidistantly between said first and said second end of said beam; connecting rod means operatively connecting each of said pairs of pistons to one of said ends, respectively, of said longitudinal beam, with said pistons operating within said cylinders to drive said beam to reciprocally pivot said beam about said central pivot axis; power output shaft means for said engine unit arranged to be rotatively driven relative to said housing means defining said cylinders; a primary eccentric mechanism connected to said longitudinal beam at a location thereon intermediate said first end of said beam and said central pivot axis, said primary eccentric mechanism being connected to effect transmission of power between said longitudinal beam and said power output shaft means of said engine unit; and balancing means connected to said longitudinal beam at a location thereon intermediate said second end of said beam and said central pivot axis providing a balancing effect against the effect of said primary eccentric mechanism, said balancing means and the other moving parts of said engine being arranged so that the common center of mass of the moving parts of said engine is located substantially on said central pivot axis of said beam and within a plane having therein both said rectilinear axes of said cylinder assemblies; said primary eccentric mechanism being connected to said beam at a point spaced a greater distance from the connection of said connecting rod means to said first end of said beam than from said central pivot axis.

4,274,368
TUNEABLE INTAKE MANIFOLD

Donald J. Shaffer, Box 88, Upper Strasburg, Pa. 17265

Continuation-in-part of Ser. No. 19,930, Mar. 12, 1979, Pat. No. 4,210,107, which is a continuation of Ser. No. 760,402, Jan. 18, 1977, abandoned. This application May 16, 1980, Ser. No. 150,364
Int. Cl.[3] F02B *17/18*
U.S. Cl. 123—52 M 9 Claims



1. An intake manifold for an internal combustion engine having an intake valve port, comprising:

an air inlet coupling at one end of the manifold for connection to a source of at least air and an outlet coupling at an opposite end for connection directly to the intake valve port of the engine;

at least one intake runner having opposite open ends, connected at one end to receive said air from said air inlet coupling and connected at its opposite end to said outlet coupling and thereby directly to said engine for conducting said air to the intake valve port of the engine;

said intake runner being defined by and having side walls forming an inlet passageway having a central axis extending along the path of air flow through the passageway;

at least one of said walls of said passageway being mounted via a mounting for movement towards and away from said central axis of said passageway to effectively decrease and increase the through flow cross sectional area as measured in a plane perpendicular to said axis throughout the length along said passageway, respectively, with said mounting including a pivotal connection, about a pivot axis gener-

ally perpendicular to the adjacent portion of said central axis and spaced therefrom for the end of said movable wall adjacent said air inlet coupling to said runner; and

spring means biasing said movable wall about said pivot axis in the direction to decrease the through flow cross sectional area of the passageway for maintaining said movable wall in an adjusted position automatically in response to engine speed.

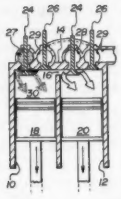
4,274,369
STRATIFIED CROSS COMBUSTION ENGINE

Jack L. Rhoads, P.O. Box 573, Taylor, Ariz. 85939

Filed Sep. 4, 1979, Ser. No. 71,987

Int. Cl.³ F02B *25/12*

U.S. Cl. 123—53 A **1 Claim**



1. A stratified cross combination engine comprising:

(a) a first cylinder and a second substantially identical cylinder sharing a common cylinder head which defines a common combustion chamber linking said cylinders;

(b) a power piston operatively disposed in each of said cylinders and each piston being substantially identical to the other in diameter and displacement and means for concommitantly reciprocating said pistons substantially in phase to produce substantially identical cylinder pressures in all but the combustion cycle;

(c) said first cylinder having an intake valve, ignition means, and means for introducing a rich fuel-air mixture therein;

(d) said second cylinder having an intake valve and means to introduce a lean fuel air mixture therein; and

(e) at least one exhaust valve disposed in one of said cylinders, whereby a rich fuel air mixture introduced into said first cylinder can be ignited, caused by the ensuing pressure increase to flow through said common combustion chamber to power the piston in said second cylinder to complete combustion prior to exhausting through said exhaust valve.

4,274,370
SELF-CONTAINED TYPE LASH ADJUSTER

Hisashi Kodama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 23, 1979, Ser. No. 23,505

Claims priority, application Japan, Mar. 23, 1978, 53-37272[U]; Mar. 23, 1978, 53-37274[U]; Mar. 23, 1978, 53-37275[U]

Int. Cl.³ F01L *1/14*

U.S. Cl. 123—90.55 **5 Claims**

1. A self-contained type lash adjuster comprising:

an adjuster body having an axial hollow;

a plunger body disposed for reciprocation within said axial hollow of said adjuster body;

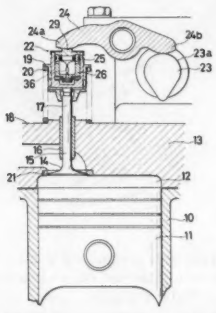
a cap closing the upper open end of said adjuster body;

said plunger body being hollow to define a reservoir chamber in said plunger body;

a pressure chamber formed in said axial hollow of said adjuster body between said adjuster body and said plunger body;

a check valve operatively associated with a passage in said plunger body permitting an oil flow only in the direction from said reservoir chamber to said pressure chamber;

a diaphragm including a stationary portion and an elastic portion with said stationary portion being secured to said



plunger body in the upper portion of said reservoir chamber; and

a plunger return spring being positioned between said adjuster body and said plunger body and biasing said plunger body.

4,274,371
APPARATUS FOR PREHEATING THE INTAKE AIR FOR AIR-COMPRESSING INTERNAL COMBUSTION ENGINES

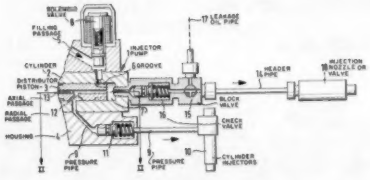
Alfred Neitz, Röthenbach, and Nunzio D'Alfonso, Nuremberg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,634

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743134

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 H **3 Claims**



1. An apparatus for preheating intake air passing through high pressure pipes leading to cylinders of air-compressing internal combustion engines with a fuel delivery having at least a fuel delivery pump and a high pressure injection pump distributing the fuel to individual injectors on the cylinders, the apparatus communicating through a header pipe means with the fuel delivery system and comprising in combination at least one injection nozzle and an ignition system, injection valve means provided at one end of all high pressure pipes leading to the engine cylinders and arranged to open at a predetermined pressure, a branch-off means provided with each of the high pressure pipes, and an isolating change-over valve means provided to shut-off said branch-off means, all of said branch-off means being brought together to common header pipe means supplying the preheating equipment with fuel under high pressure all branch-off means being arranged to be individually and in series connectable to the header pipe means as the engine is cranked to supply the preheating apparatus intermittently with fuel subject to a high pressure, said injection valve means at the

end of the high pressure pipes releasing fuel admission to individual cylinders only when all of said branch-off means remain closed, a leakage oil pipe connectable by said change-over valve means to said header pipe means when all branch-off means are closed, and a distributor piston rotatably and slidably movable in the high pressure injection pump so that all high pressure pipes are capable of being individually supplied with fuel and isolated again, the branch-off means being formed directly by a pressure space portion in the high pressure injection pump, said header pipe means communicating directly with said pressure space portion, said isolating change-over valve means shutting-off the branch-off means being formed as an isolating change-over valve in said header pipe means.

4,274,372

LIGHTWEIGHT PISTON FOR INTERNAL COMBUSTION ENGINES

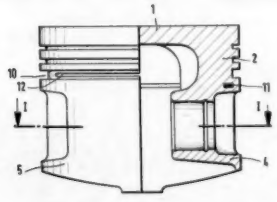
Walter Kelm, Neuenstadt-Stein, and Ulrich Landau, Oedheim, both of Fed. Rep. of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 20, 1979, Ser. No. 77,213

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841980

Int. Cl.³ F16J *1/14, 1/04*

U.S. Cl. 123—193 P **7 Claims**



1. A cast light-alloy piston comprising a skirt, piston pin bosses, said skirt being recessed adjacent to said bosses, said skirt being non-symmetrical on both sides of the plane of the piston pin, said skirt

(a) being connected on one side to said piston pin bosses by first supporting ribs which extend at an angle of 30 to 60 degrees to the piston pin axis,

(b) being connected on the other side to the piston pin bosses by second supporting ribs which extend at an angle of 90 degrees to the piston pin axis.

4,274,373

COMBINED SPLIT ENGINE AND CLOSED LOOP MIXTURE CONTROL OPERATION WITH ENRICHED FUEL DURING PARTIAL CYLINDER MODE

Fukashi Sugasawa, Yokohama; Haruhiko Iizuka, and Junichiro Matsumoto, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 7, 1979, Ser. No. 46,350

Claims priority, application Japan, Jun. 16, 1978, 53-72851

Int. Cl.³ F01N *3/15*

U.S. Cl. 123—440 **4 Claims**

1. A control system for an internal combustion engine having first and second cylinder groupings, comprising

split engine control means for operating said engine on full cylinders in which said first and second cylinder groupings are activated to give higher engine power when the magnitude of engine load is above a predetermined value or operating said engine on partial cylinder in which only said second cylinder grouping is activated to give lower engine power when the engine load magnitude is below said predetermined value and said first cylinder is deactivated to allow air to be pumped therethrough;

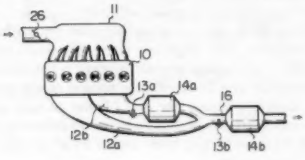
first and second upstream exhaust conduits for passing the exhaust gases from said first and second cylinder groupings when the engine is operated on full cylinders, respectively, to a common junction and for passing the pumped air from said first cylinder grouping and the exhaust gases from said second cylinder grouping to said common junction when the engine is operated on partial cylinder;

a common downstream exhaust conduit connected to said common junction for passing said gases therethrough to the atmosphere;

a first exhaust gas sensor and a first catalytic converter disposed in said second exhaust conduit;

a second exhaust gas sensor and a second catalytic converter disposed in said common conduit; and

feedback means selectively responsive to a signal from said first exhaust gas sensor during the partial cylinder engine operation for correcting the air-fuel ratio of mixture supplied to said second cylinder grouping to the rich side of stoichiometric point, and responsive to a signal from said second exhaust gas sensor during the full cylinder engine operation for correcting the air-fuel ratio of mixture supplied to both said first and second cylinder groupings to said stoichiometric point, whereby during said partial cylinder engine operation the NOx component of the gases from said second cylinder grouping is purified in said first catalytic converter at a maximum conversion efficiency and the HC and CO components thereof are mixed with said pumped air and purified in said second catalytic converter at a maximum conversion efficiency, and during the full cylinder engine operation the NOx, HC and CO components of the gases from said first and second cylinder groupings are purified simultaneously in said second and first catalytic converters, respectively.



4,274,374

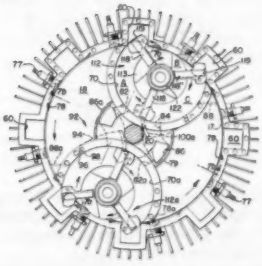
AIR-COOLED ROTARY INTERNAL COMBUSTION ENGINE

Choong G. Lee, 1943 Vancouver Dr., Honolulu, Hi. 96822

Filed Jan. 10, 1979, Ser. No. 2,367

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—241 **10 Claims**



1. An air-cooled, rotary internal combustion engine, comprising:

a housing having a substantially circular interior chamber

and a plurality of radially-extending recesses spaced along the periphery of said chamber;

a plurality of heat-transfer elements disposed on the exterior surface of said housing;

a rotor rotatably disposed within said chamber and having a substantially circular recess formed in one surface;

a lever assembly disposed within said circular recess and rotatable within said recess about an axis offset from the rotational axis of said rotor, said assembly having a plurality of radially-extending arms, the end of each arm engaging successive ones of said recesses during rotation of said lever assembly and said rotor;

a sealing element pivotally disposed on the end of each of said arms and engageable with the peripheral surface of said circular recess to provide a fluid seal;

a plurality of rotatable combustion chambers defined between adjacent arms of said lever assembly;

means for introducing a combustible mixture into the interior of said circular recess;

ignition means in said housing adjacent to each of said recesses for igniting said combustible mixture within the volume between two adjacent arms, the ends of said two adjacent arms simultaneously engaging consecutive recesses, whereby the force of combustion tends to pivot said lever assembly about the end of one of said arms in engagement with one of said recesses to drive the geometric axis of rotation of said lever assembly about the rotational axis of said rotor;

fan means coaxially disposed on the rotational axis of said rotor to draw air over the exterior surface of said housing and said heat transfer elements;

means including an exhaust blower coaxially disposed on the rotational axis of said rotor and said fan to remove exhaust gases from the interior of said circular recess; and

means including flow-directing channels in said housing, said rotor and said lever assembly for circulating a lubricant through said engine.

4,274,375

PISTON, ESPECIALLY FOR INTERNAL COMBUSTION ENGINES

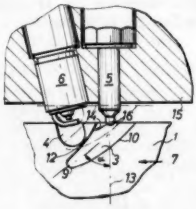
Heinz Küpper, Troisdorf-Sieglar, and Helmut Busch, Lohmar, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,798

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838130

Int. Cl.³ F02B *19/08*

U.S. Cl. 123—263 **10 Claims**



1. A piston, especially for internal combustion engines, having means for introducing and producing a rotating movement of combustion air, a fuel injection nozzle, and an ignition device, said piston comprising:

a combustion chamber depression in said piston, said depression having a bottom, and an at least nearly cylindrical wall for accommodating combustion air rotation about an axis extending in the longitudinal direction of said piston;

a first recess adapted to communicate with said fuel injection nozzle, said first recess being provided in said at least nearly cylindrical wall and being formed by a sharp-edged trough, said trough being inclined to a pertaining surface line of said combustion chamber depression and pointing in the direction of said rotating movement of air in said depression, said trough presenting a flattened terminating portion at that end furthest from said fuel injection nozzle, whereby fuel having a direction-component in the direction of said rotating movement of air is adapted to be injected onto a pertaining wall of said trough;

a second recess adapted to communicate with said ignition device, said second recess also being provided in said at least nearly cylindrical wall closely adjacent to said first recess, said second recess pointing in the direction opposite to the direction of said rotating movement of air and being positioned at an angle to said first recess; and

a separating formation arranged between said first recess and said second recess.

4,274,376

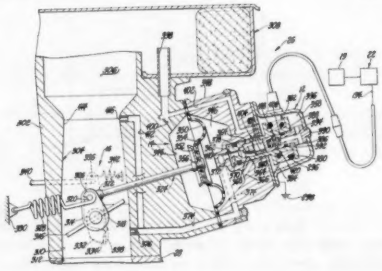
GOVERNOR APPARATUS AND SYSTEM

Chong L. Tsiang, Utica, and Robert O. Koch, Warren, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Continuation of Ser. No. 724,741, Sep. 20, 1976, abandoned. This application Dec. 26, 1978, Ser. No. 973,228

Int. Cl.³ F02D *11/10*

U.S. Cl. 123—360 **3 Claims**



1. A carburetor and governor assembly for an internal combustion engine, comprising body means, induction passage means formed through said body means and having an inlet end and an outlet end, a venturi situated within said induction passage means and generally between said inlet and outlet ends, variably positionable throttle valve means situated in said induction passage means for variably controlling the rate of flow of motive fluid through said induction passage means and into said engine, a fluid pressure responsive motor means comprising first and second chamber means generally separated by a pressure responsive movable diaphragm, connecting means operatively interconnecting said diaphragm with said throttle valve means, first conduit means communicating between a source of ambient atmosphere and said first chamber means, second conduit means adapted to communicate as between said source of ambient atmosphere and said second chamber means, third conduit means adapted to communicate as between a source of engine vacuum and said second chamber means, actuatable control valving means generally interposed in fluid circuit in said second and third conduit means, said control valving means when actuated toward a first position being effective to permit a relatively proportionally greater communication between said second chamber means and said source of ambient atmosphere and a relatively proportionately lesser communication between said second chamber means and said source of engine vacuum, said control valving means when actuated in a direction opposite from said first position and toward a second position also being effective to permit a relatively proportionally lesser communication between said second chamber means and said source of ambient atmosphere

and a relatively proportionally greater communication between said second chamber means and said source of engine vacuum, said diaphragm being effective to move said throttle valve means toward a more nearly closed throttle position when said communication as between said second chamber means and said source of engine vacuum becomes sufficiently great to cause a pressure differential of sufficient magnitude across said diaphragm, and fourth conduit means effectively communicating between said second chamber means and said induction passage means generally in the vicinity of said venturi, said fourth conduit means being effective for communicating a venturi generated vacuum to said second chamber means, each of said third and fourth conduit means comprising calibrated passage means, said third and fourth conduit means being interconnected to each other, said third conduit means communicating with said induction passage means generally downstream of said throttle valve means, and said communication between said fourth conduit means and said second chamber means being controlled by said valving means in the same manner and relationship with respect to said ambient atmosphere as is said communication between said source of engine vacuum and said second chamber means.

4,274,377

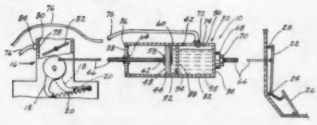
VACUUM RESPONSIVE CARBURETOR LINKAGE

Stanley P. Kraw, Jr., 7403 S. 48th St., Omaha, Nebr. 68157

Filed Apr. 28, 1980, Ser. No. 144,246

Int. Cl.³ F02B *11/08*

U.S. Cl. 123—396 **5 Claims**



1. A vacuum responsive carburetor linkage adapted for connection between the accelerator pedal linkage and carburetor throttle lever of an internal combustion engine, comprising,

a housing,

said housing at least partially defining a vacuum chamber therein,

a movable wall engageable with said housing and further defining said vacuum chamber,

said wall being movable relative to said housing between fully extended and retracted positions such that said chamber is extended and retracted in response to movement of said wall toward said fully extended and retracted positions respectively,

means for connecting said housing to one of said accelerator pedal linkage and carburetor throttle lever,

means for connecting said movable wall to the other of said accelerator pedal linkage and carburetor throttle lever, and

vacuum conduit means having one end in communication with said chamber and an opposite end adapted for connection to a vacuum source of the internal combustion engine,

said end wall being movable toward said extended position in response to movement of said accelerator pedal linkage when the carburetor vaccum is low whereby lost motion occurs between said accelerator pedal linkage and carburetor throttle lever and said end wall being urged toward said retracted position when the carburetor vacuum is high for movement of said carburetor throttle lever in substantially direct response to movement of said accelerator pedal linkage,

a stationary baffle disposed within said housing interiorly of said piston, said baffle including an orifice at a lower portion thereof for fluid communication therethrough,

a liquid disposed within said housing between said one end and said piston, and

said orifice being positioned adjacent a lower edge of said baffle, the level of said liquid being at least as high as said orifice, when the movable wall is in the fully extended position therefor.

4,274,378

IGNITION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

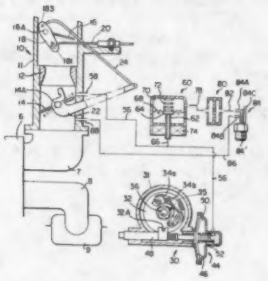
Takao Tate, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 29, 1979, Ser. No. 43,464

Claims priority, application Japan, Dec. 8, 1978, 53/167963[U]

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—421 **4 Claims**



1. An internal combustion engine comprising:

an engine body;

an intake system;

an exhaust system;

a catalytic converter arranged in the exhaust system;

a throttle valve arranged in the intake system;

a choke valve arranged upstream of the throttle valve;

a choke operating mechanism;

a lever-link mechanism co-operating with the choke operating mechanism for maintaining the throttle valve in its slightly opened position when the choke valve is in its closed condition in order to start the engine which is cold;

ignition control means for igniting, at every operational cycle of the engine, the combustible mixture introduced into the engine body via the intake system;

vacuum actuator means having an advance control chamber for controlling, in accordance with the vacuum level therein, the ignition timing;

a vacuum line connecting the advance control chamber with a first vacuum port formed in the intake system at a position located slightly upstream of the fully closed throttle valve; and

a vacuum control valve means, comprising:

a valve seat which is on one end thereof opened to the vacuum line and which is on the other end thereof opened to the atmosphere;

a valve member normally resting on the valve seat to disconnect the vacuum line from the atmosphere;

a spring urged diaphragm to which the valve member is attached and a vacuum chamber formed on one side thereof remote from the valve seat;

a second vacuum line connecting a second port, formed in

the intake system at a position always located downstream of the throttle valve, with the vacuum chamber;

a temperature sensitive valve to connect said second vacuum line with said vacuum chamber when the temperature of the engine is lower than a predetermined value and to connect said second vacuum line with atmosphere when the temperature of the engine is above a predetermined value; and

a time-delay orifice arranged in the second vacuum line between said temperature sensitive valve and said vacuum chamber to delay application of vacuum from said second vacuum line to said vacuum chamber;

said vacuum control valve means introducing atmospheric air into the vacuum line for controlling, in a cold condition of the engine, the vacuum level in the advance control chamber of the actuator means after a predetermined period of time has elapsed from the start of the engine, whereby the ignition timing is, firstly, advanced to obtain a stabilized idle operation, then, delayed to rapidly activate the catalytic converter and again advanced after the engine is fully warmed-up.

4,274,379

METHOD AND SYSTEM FOR CONTROLLING IGNITION TIMING OF INTERNAL COMBUSTION ENGINES

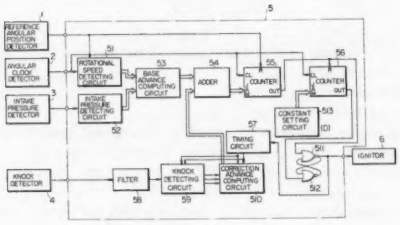
Toshiharu Iwata, Aichi; Tadashi Hattori; Siniti Mukainakano, both of Okazaki; Kenji Goto, and Daisaku Sawada, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 12, 1979, Ser. No. 47,935

Claims priority, application Japan, Jun. 13, 1978, 53-71246; Jun. 13, 1978, 53-71248

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **4 Claims**



1. A method for controlling the ignition timing of an internal combustion engine responsive to the knocking of the engine, comprising the steps of:

sensing the knocking of the engine;

detecting the magnitude of the knocking with respect to at least first, second and third predetermined magnitude levels during each combustion cycle of the engine and generating first, second and third knocking signals whenever the magnitude of the sensed knocking exceeds said first, second and third predetermined magnitude levels, respectively;

sampling said knocking signals for a sampling period of not less than several tens of times of combustion cycles of the engine and counting respective numbers of said first, second and third knocking signals produced during said sampling period;

comparing said numbers of said first, second and third knocking signals respectively with three different reference ranges and generating an ignition timing correction signal to effect either a retard or an advance of ignition timing depending on whether at least one of said numbers exceeds a corresponding one of said three different reference ranges or all of said numbers are below respective ones of said three different reference ranges.

4,274,380

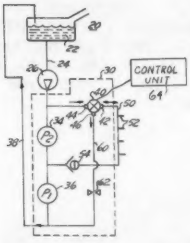
CHECK VALVE CENTRAL METERING INJECTION SYSTEM

Didier J. de Vulpillieres, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 1, 1979, Ser. No. 8,463

Int. Cl.³ B05B *9/06*

U.S. Cl. 123—456 **16 Claims**



1. A fuel system for supplying fuel to an internal combustion engine having at least one fuel injector, a control unit for generating control signals in timed relation to the combustion processes therein, and a source of pressurized fuel, the system comprising:

fuel rail means having a first and a second end for receiving pressurized fuel and having means for delivering said fuel to the at least one fuel injector;

bi-level means in fluid communication with the source of pressurized fuel for selectively maintaining the pressure within said fuel rail means at a first and second level of pressure, said bi-level means further including a first and a second pressure regulator connected in series, said series combination having an input, an output and common node;

a check valve means in fluid communication with said second end of said fuel rail means for permitting fluid to flow from said common node into said fuel rail means;

a three-way valve means having first, second and third orifices in fluid communication with said bi-level means and said fuel rail means, for selectively communicating, in response to external control signals, fuel at said first and at said second pressure levels to said fuel rail means;

a first conduit means for providing fluid communication between said first orifice and the inlet of said bi-level means;

a second conduit means for providing fluid communication between said second orifice and the first end of said fuel rail;

a third conduit means for providing fluid communication between said third orifice and the outlet of said bi-level means; and

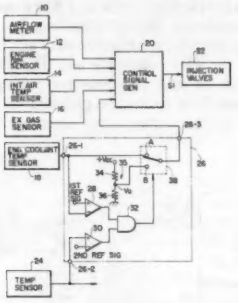
exit conduit means in fluid communication with said third orifice and said outlet of said bi-level means for permitting fuel to exit therefrom.

4,274,381

AIR/FUEL RATIO CONTROL SYSTEM EQUIPPED WITH A TEMPERATURE SENSOR FAIL-SAFE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toshimi Abo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 2, 1979, Ser. No. 35,302
Claims priority, application Japan, Jun. 26, 1978, 53/76438
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—479 **8 Claims**



1. In an air/fuel ratio control system for an internal combustion engine; including sensors for detecting engine parameters, said sensors including an engine temperature sensor for producing an output signal indicative of the engine temperature, a control signal generator responsive to the detected engine parameters, and one of a fuel supply mechanism and air/fuel mixture supply mechanism responsive to a control signal from said control signal generator for supplying one of fuel and air/fuel mixture to said engine; wherein the improvement comprises:

(a) first means for providing an engine parameter signal indicative of the engine temperature;

(b) second means for detecting whether said engine temperature sensor is in a normal or abnormal operative condition in view of said engine parameter signal;

(c) third means for producing a predetermined voltage having a magnitude which corresponds to a voltage of the output signal of said engine temperature sensor under conditions of normally high temperatures; and

(d) fourth means for selectively transmitting the output signal of said engine temperature sensor and said predetermined voltage in accordance with a normal or abnormal condition of said engine temperature sensor detected by said second means.

4,274,382

APPARATUS FOR PERFORMING STEPWISE REACTIVATION OF CYLINDERS OF AN INTERNAL COMBUSTION ENGINE UPON DECELERATION

Fukashi Sugasawa, Yokohama; Haruhiko Iizuka, and Junichiro Matsumoto, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Apr. 30, 1979, Ser. No. 34,262
Claims priority, application Japan, May 12, 1978, 53-56891
Int. Cl.³ F02D *5/00, 13/06*
U.S. Cl. 123—481 **23 Claims**

12. Apparatus for controlling the number of enabled cylinders of an internal combustion engine having a plurality of cylinders during deceleration, comprising:

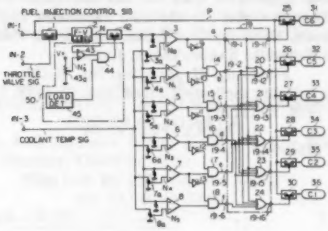
(a) first means for producing a first signal indicative of the rotational speed of a crankshaft of said engine;

(b) second means for producing a second signal indicative of deceleration of said engine;

(c) third means responsive to said first signal for producing a plurality of control signals, the number of which varies progressively in response to said first signal;

(d) fourth means responsive to said second signal for enabling said third means to produce said control signals upon deceleration of said engine;

(e) a plurality of switching means respectively responsive to each of said control signals for respectively disabling each of said cylinders;



(f) fifth means for generating a third signal indicative of the running of at least one auxiliary power consuming unit driven by said engine; and

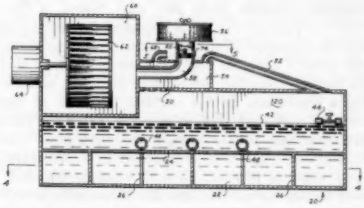
(g) sixth means responsive to said third signal for decreasing the number of said control signals so as to increase the number of enabled cylinders for compensating the load increasing caused by the operation of said power consuming unit.

4,274,383

FUEL VAPORIZER

Jerry W. Adams, Wellington, Tex., assignor to Vapor Matic Corporation, Wellington, Tex.

Filed Aug. 20, 1979, Ser. No. 67,879
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—523 **11 Claims**



1. A fuel vaporizer comprising:

a. a hot water compartment having

(i) a plurality of baffles located therein,

(ii) a hot water inlet,

(iii) a return water outlet, and

(iv) the top of said hot water compartment being

(v) a hot plate,

b. an air inlet system having

(i) a vaporizer air filter,

(ii) an air inlet connecting the filter to

(iii) a fan within

(iv) a fan cage,

(v) said fan rotatable by

(vi) a fan motor connected thereto,

c. a vapor compartment having

(i) said hot plate forming the bottom thereof,

(ii) a vaporizer liquid fuel inlet line terminating in

(iii) a fuel float valve for maintaining a liquid fuel pool in the vapor compartment,

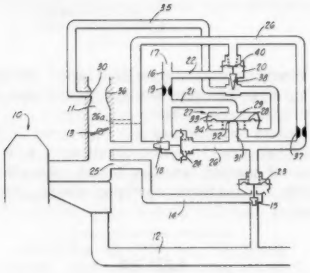
(iv) an air conduit leg from the fan cage,
(v) a vapor conduit and holes in the top of the vapor compartment connecting the vapor compartment with
d. a vapor-air mixture compartment having
(i) another air conduit leg from said fan cage,
(ii) a vapor-air outlet connected to
e. a vapor line which extends to an engine carburetor.

4,274,384

ENGINE EXHAUST GAS RECIRCULATION SYSTEM

Keiichi Osawa, Asaka; Kiyoshi Ishii, Tachikawa, and Hiroyuki Nishimura, Kounosu, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 70,024
Claims priority, application Japan, Sep. 12, 1978, 53-111320; Sep. 14, 1978, 53-112185
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—568 **4 Claims**



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, a throttle valve in the intake passage, and an exhaust passage for carrying exhaust gases from the engine, the improvement comprising, in combination: a passageway connecting the exhaust passage to the intake passage downstream from the throttle valve for recirculating exhaust gases into said engine, a first control valve in said passageway, an air conduit connecting said intake passage downstream from said throttle valve to atmosphere, a second control valve in said air conduit, each of said control valves having a vacuum responsive actuator, said air conduit having a restriction device located between its opening to atmosphere and said second control valve, a vacuum line connected to said intake passage upstream from said throttle valve, a regulating valve responsive to differential pressure between vacuum pressure in said vacuum line and vacuum pressure in said air control line downstream from said restriction device, a control pipe system connecting said vacuum responsive actuators to said intake passage near said throttle valve, means whereby said regulating valve acts through said control pipe system to operate said vacuum responsive actuators for said control valves, and an air induction valve responsive to vacuum pressure in said control pipe system and operatively positioned to change said differential pressure.

4,274,385

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Haruo Yuzawa, and Tsuneomi Yano, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Nov. 26, 1979, Ser. No. 97,383
Claims priority, application Japan, Dec. 6, 1978, 53-149939
Int. Cl.³ F02B *47/08*
U.S. Cl. 123—571 **17 Claims**

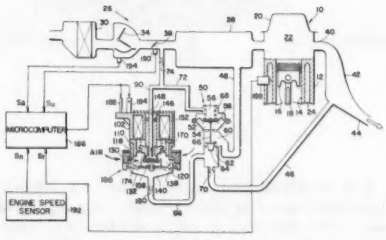
1. An exhaust gas recirculation system for an internal combustion engine having an air-fuel mixture supply system and an exhaust system, comprising:

exhaust gas recirculation passageway means for providing communication between the exhaust system and the mixture supply system of the engine,

an exhaust recirculation rate control valve assembly provided in said passageway means, said passageway means including a flow restriction located between said valve assembly and the exhaust system of the engine,

vacuum passageway means for providing communication between said mixture supply system and said valve assembly for introducing into the valve assembly a vacuum developed in the mixture supply system during operation of the engine, the valve assembly being responsive to the vacuum developed therein and being operative to control the recirculation rate of exhaust gases therethrough depending upon the relationship between the vacuum developed in the valve assembly and the exhaust gas pressure developed in said recirculation passageway means between said flow restriction and said valve assembly,

a vacuum compensating valve assembly comprising a stationary solenoid unit, a valve element movable between a first position providing communication between said vacuum passageway means and the open air and a second position blocking said communication, the valve element being moved between the first and second positions as said solenoid unit is energized and de-energized, and a flexible diaphragm deformable in response to the exhaust gas pressure developed in said recirculation passageway means between said flow restriction and said recirculation rate control valve assembly, said diaphragm being engageable with said valve element for forcing the valve element to stay in said first position thereof when the exhaust gas pressure acting on the diaphragm is at a subatmospheric level, and



a microcomputer electrically connected to said solenoid unit and responsive to variation in prescribed operational parameters of the engine for energizing and de-energizing the solenoid unit in accordance with the variation in said parameters.

4,274,386

TURBO PLATE VAPORIZER

Jose Reyes, 1427 5th Ave., Bay Shore, N.Y. 11706

Filed Aug. 24, 1979, Ser. No. 69,255
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—591 **4 Claims**

1. Apparatus inserted between the bottom of a carburetor and the top of the intake manifold of the internal combustion engine using gasoline, helping to further atomize and vaporize the fuel mixture, which apparatus comprises:

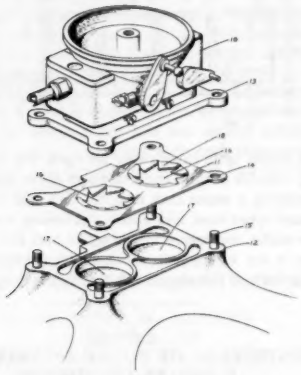
(a) a plate that fits between the carburetor and and the intake manifold fastened to both, and

(b) openings in the plate coinciding with similarly placed openings from the carburetor and openings leading to the intake manifold;

(c) with a plurality of triangularly convex shaped funnel like vanes acting as liquid fuel collectors set in the openings of the plate with the bases of the vanes contiguous to another forming the outer circumference of the plate opening,

then, gently sloping down into the openings and toward their centers, forming an inner circumference at the points of the vanes smaller in size than the outer circumference, and

(d) with each of the vanes slanted in a counterclockwise direction with the larger side of the vanes at the outer circumference first forming a slightly raised shoulder and then dropping gently toward the center of the opening



forming a cup shaped convex curved surface, curving in toward the center of the opening, meeting the other side of the vane also similarly curved at the apex of the vanes funneling liquid fuel particles to the center of the openings; and

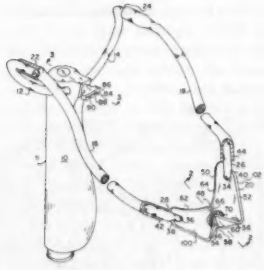
(e) which vanes cause the fuel mixture to swirl with greater turbulence, collecting any liquid fuel particles into the center of the air stream, generating greater vaporization with a continuing pattern of atomization and vaporization.

4,274,387

SLINGSHOT

George H. McBride, 7612 Teal Dr., Huntsville, Ala. 35802

Filed Apr. 18, 1980, Ser. No. 141,285
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—20 A **3 Claims**



1. A slingshot comprising:

an elongated handle;

a pair of forked prongs extending from and supported by an end of said handle;

a pouch comprising a flexible, pliant, elongated strap;

a first elastic line connected between one of said prongs and one end region of said elongated strap, and a second elastic line connecting between the other of said prongs and an opposite end region of said elongated strap; and

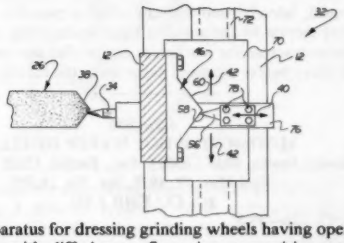
said strap having a pair of oppositely positioned, variable depth pleats, one pleat extending inward on each of opposite sides of the strap, and each pleat being formed by two symmetrically positioned, triangular-shaped regions which join along a generally straight common crease which extends orthogonally inward from a side edge of said strap, and by two creases, in an opposite direction to that of said common creases, and in which the line of the two creases extends inward from an outer edge and bisects the line of said common crease, whereby, with said pleats partially formed, a sloping pocket is formed into which shot may be deposited and then the pocket essentially closed by pressing end regions of said strap together to contain the shot and ready the slingshot for shooting.

4,274,388

METHOD AND APPARATUS FOR DRESSING GRINDING WHEELS

Leonard L. Ivel, Leicester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 15, 1979, Ser. No. 84,717
Int. Cl.³ B24B *53/08*
U.S. Cl. 125—11 TP **5 Claims**



5. An apparatus for dressing grinding wheels having operating surfaces with differing configurations comprising means for positioning the grinding wheel in a fixed position relative to a base structure, carriage means mounted on said base structure and adapted for movement in a first direction relative to the grinding wheel, a slide bar mounted on said carriage means being movable toward and away from the grinding wheel in a second direction which is transverse to said first direction, dressing means mounted on said slide bar for contacting the operating surface of the grinding wheel and removing portions thereform, a single cam surface mounted in a fixed position relative to said base and the grinding wheel and a plurality of interchangeable cam followers, each cam follower having a follower surface with configuration differing from the configuration of the remaining cam followers, each cam follower being selectively mountable on said slide bar so the follower surface of each cam follower engages the cam surfaces whereby each cam follower defines a differing path of movement for the dressing tool when in abutment with said cam surface and thereby, forms a different operating surface on the different grinding wheels.

4,274,389

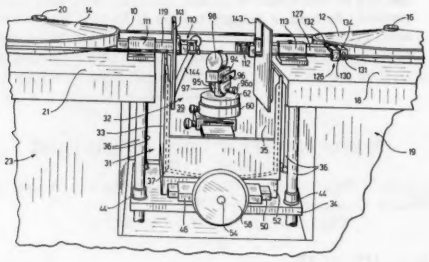
CUTTING APPARATUS FOR SEMI-CONDUCTOR MATERIALS

Arnold G. White, Trail; James K. Tarbet, Montrose; Dennis A. Vanness; Gordon J. Woods, both of Trail, and William F. H. Micklethwaite, Rossland, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed Mar. 17, 1980, Ser. No. 130,933
Claims priority, application Canada, Jan. 25, 1980, 344392
Int. Cl.³ B28D *1/08*; B26D *1/54*
U.S. Cl. 125—21 **9 Claims**

1. A cutting apparatus comprising a pair of spaced-apart co-planar rotatable wheels, a continuous metallic band passing over said wheels, means for driving one of said wheels to move said band unidirectionally through a path encompassing said

wheels and through a linear cutting region, means for moving the other wheel towards and away from the driven wheel for tensioning the metallic band, workpiece support means stationed in the cutting region adapted to raise a workpiece to the metallic band at a controlled speed, means for supplying an abrasive slurry to said metallic band in the cutting region



upstream of the workpiece, and guide-wipers upstream and downstream of the cutting region each comprising a pair of opposed, laterally and linearly offset wipers for dampening lateral motion of the metallic band, maintaining the band in alignment across the workpiece and wiping the band of abrasive slurry before the band passes over the driven wheel.

4,274,390

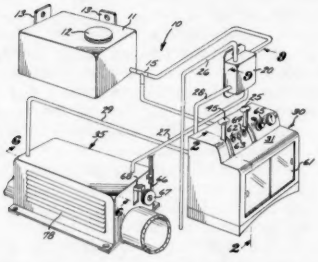
AUTOMOTIVE HOT WATER HEATER

Shinsuke Azuma, 6020 Lindley Ave., Encino, Calif. 91316

Filed Mar. 19, 1979, Ser. No. 21,599

Int. Cl.³ F24B *1/00*

U.S. Cl. 126—19.5 **4 Claims**



1. A heating assembly for use in an automobile, comprising:

a heat exchange housing adapted to be secured to an exhaust pipe of said automobile, said housing including a heating coil deployed for translation relative said pipe and pivotal support means connected to said coil for articulation thereof;

a storage container mounted in said automobile for receiving water therein;

pressure relief means connected to said coil and to said storage container for relieving gases under pressure in said coil and for replacing said relieved gases with water;

dispensing means operatively connected to said coil and said storage container including dispensing valves for releasing water therefrom;

temperature indicating means connected to sense the temperature of the water in said coil for providing a visual indication thereof; and

manual control means connected to said pivotal support means for articulating said coil in and out of proximity of said exhaust pipe.

4,274,391

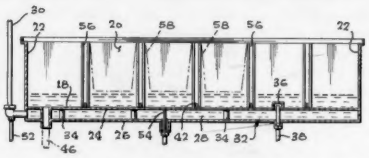
STEAM TABLE

Vahe Karapetian, 762 E. Slauson, Los Angeles, Calif. 90011

Filed Oct. 23, 1978, Ser. No. 953,649

Int. Cl.³ F24B *9/00*; F24D *1/00*; A47J *27/06*

U.S. Cl. 126—33 **16 Claims**



1. A steam table comprising an open top tank, said tank having a double bottom comprising an upper base and a lower base defining a water tank integral with said steam table beneath said upper base, said water tank having a water inlet and a water outlet, and means in said water tank for eliminating air bubbles in the water tank which enter the water tank when water is fed into the water tank through said water inlet.

4,274,392

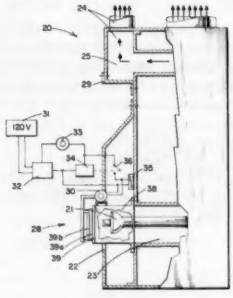
CONTROLLED AIR INTAKE APPARATUS FOR FURNACES AND THE LIKE

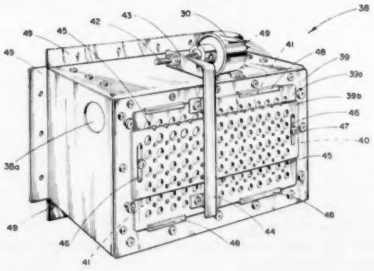
Delbert L. Myers, 3229 W. 32nd St., Anderson, Ind. 46011

Filed Sep. 17, 1979, Ser. No. 76,341

Int. Cl.³ F24H *3/00*; G05D *23/00*

U.S. Cl. 126—112 **10 Claims**





1. A controlled air intake apparatus for a furnace of the type which includes a burner air inlet opening, a combustion zone, a flue and a flue updraft opening, said controlled air intake apparatus comprising:

a first closure member disposed over the updraft opening of the flue said closure member comprising a fixed plate means for completely closing said flue updraft opening under all operating conditions;

a second closure member disposed over the burner air inlet opening, said second closure member including a first plurality of apertures arranged into a first pattern and adapted for introducing air into said combustion zone via said burner air inlet opening; and

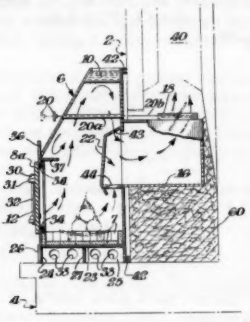
a movable cover plate disposed relative to said second closure member, said movable cover plate defining a plurality of openings arranged into a second pattern and further, said movable cover plate being movable between a first position wherein said second pattern of openings is in registration with said first pattern of apertures and a second position wherein said first and second patterns are completely out of registration with each other such that air flow into said combustion zone via first plurality of apertures is prevented.

4,274,393

FIREPLACE ASSEMBLY

Robert T. Scaran, Newark, Del., assignor to R. Scaran, Inc., Newark, Del.

Filed Jul. 20, 1979, Ser. No. 59,395
Int. Cl.³ F24C *15/30*
U.S. Cl. 126—123 **10 Claims**



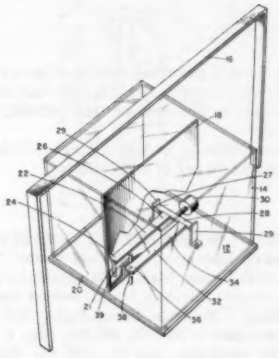
1. A fireplace assembly comprising a firebox installed upon the hearth of a fireplace in which to support combustion, said firebox having at least one door through which fuel may be introduced into the combustion zone, each such door having controllable draft means through which the flow of air to support combustion may be controlled, and having a smoke outlet box mounted on the rear of said firebox extending into the fireplace opening, there being an opening in the rear wall of said firebox into said outlet box through which the generated smoke passes into said smoke outlet box and thence through controllable damper means located on said smoke outlet box and opening into the chimney of said fireplace, said damper means controlling the amount of smoke and heat passing up said chimney, and having a spark shield located in said firebox attached to the rear wall thereof and at least partially covering said opening into said smoke outlet chamber, said spark shield extending into said combustion chamber from above said opening into said smoke outlet box in a direction forwardly and downwardly from said opening and substantially covering said opening but providing a gap between said shield and said opening at both substantially vertical sides of said shield and at the lower, substantially horizontal, side of said shield, and having a smoke shelf protruding from the front wall of said firebox substantially horizontally and rearwardly into said combustion chamber and being located at a vertical position between the top and bottom of said spark shield, whereby said spark shield and smoke shelf cooperatively coact to provide enhanced heat circulation and spark control within said firebox.

4,274,394

ELECTROMECHANICAL SOLAR TRACKING APPARATUS

Robert P. Stromberg, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 17, 1979, Ser. No. 30,806
Int. Cl.³ F24J *3/02*; G02B *5/08*
U.S. Cl. 126—425 **8 Claims**



1. Apparatus for controlling orientation of a solar collector comprising; a member rotatable about a longitudinal axis thereof; a first bimetallic element having one end fixedly positioned at a first location spaced from said member and another end secured to said member, heat-induced flexing of said first element effecting rotation of said member; a second bimetallic element having one end secured to said member at a position spaced from said first element for movement in response to rotation of the member, heat induced flexing of said second element effecting movement of another end thereof to enhance or cancel the effects of the movement on said end; a pair of electric terminals spaced from opposing sides of the other end of said second element; shade means for selectively exposing said elements to the sun, the elements being equally exposed to the sun when in a desired orientation and unequally exposed to the sun when in an undesired orientation, equal exposure to the sun effecting substantially equal heatings and compensatory flexings of the bimetallic elements, and unequal exposure to the sun effecting substantially unequal heatings and unequal flexings of the bimetallic elements thereby causing contact by the other end of said second element with one said terminals.

4,274,395

SOLAR ENERGY ABSORBER

John R. Bangs, 12 Randall Rd., Princeton, N.J. 08540

Filed Sep. 25, 1978, Ser. No. 945,648
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 **7 Claims**

1. A solar heat collector, comprising:

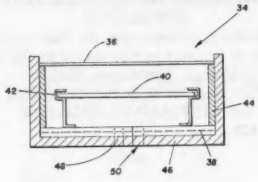
(a) at least one cover plate capable of passing solar energy having a major surface with predetermined peripheral dimensions and shape;

(b) a solar energy absorber having peripheral dimensions and shape similar to said cover plate;

(c) at least one infrared absorbing member interiorly supported, disposed and spaced between said cover plate and solar energy absorber and having peripheral dimensions smaller than said cover plate and said solar energy absorber;

(d) means for mounting said cover plate and solar energy absorber in spaced relation with said infrared absorbing member;

(e) inlet means defining an area through which a heat transfer fluid may pass into said collector under, above, and



around the infrared absorbing member to permit turbulent flow of the heat transfer fluid through the collector in close proximity to said absorber and infrared absorbing member; and

(f) outlet means defining an area through which the heat transfer fluid passes out of said collector.

4,274,396

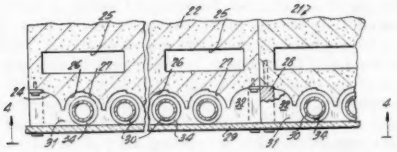
STRUCTURAL SOLAR ENERGY COLLECTOR

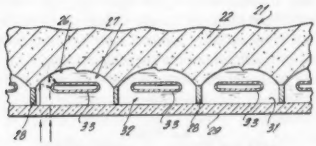
Melville F. Peters, Livingston, N.J., and Walter T. Peters, Harbor Rd., East Dennis, Mass. 02641, assignors to Walter Todd Peters; Margot Elizabeth Peters, both of East Dennis, Mass. and Albert F. Kronman, Locust Valley, N.Y.

Continuation-in-part of Ser. No. 901,581, May 1, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,623

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **5 Claims**





1. A structural solar energy collector for a building comprising at least one outer surface a series of spaced elongated recesses in the outer wall, a first and a second elongated arcuate solar light reflecting member longitudinally disposed within the recesses, a fluid bearing line assembly including a plurality of elongated tubes supported upon the outer wall and disposed at least partially within the spaced elongated recesses to receive solar energy coming from the light reflecting surfaces, said tubes being disposed along the center of curvature of the arcuate solar reflecting surfaces, a solar energy transmitting cover member overlying the fluid bearing lines and means to interconnect the fluid bearing lines into a continuous circulating heat transfer system in which the said first arcuate reflecting member has a radius of curvature of:

$$R^1m = r\frac{(\sin(i_r+i_s)-\cos i_r(\sin i_r-\sin i_s)/\sin i_r \cos i_r}{\sin(i_r+i_s)}$$

and the said second arcuate reflecting member has a radius of curvature of:

$$R^2m = r\frac{(\sin(i_r+i_s)+\cos i_s(\sin i_r-\sin i_s)/\sin i_s \cos i_s}{\sin(i_r+i_s)}$$

where R^1m is the radius of the reflecting member on the sun rise side of the arcuate reflector, R^2m is the radius of the reflecting member on the sun set side of the arcuate reflector, r is the radius of the fluid bearing tubes, i_r is the angle of incidence of solar rays after sun rise, i_s is the angle of incidence of solar rays before sun set.

4,274,397

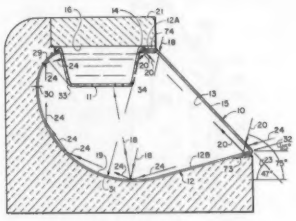
SOLAR HEATER

Clifford W. Hill, 844 S. Thunderbird Rd., Florence, S.C. 29501

Filed Mar. 16, 1978, Ser. No. 887,216

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—451 **2 Claims**



1. A solar heater for humidification and cooking within a building comprising

(a) a curvalinear non-parabolic reflector defining the rear wall of the solar heater and having top and bottom edges defining corresponding edges of a front window therebetween, side walls extending between the top and bottom walls to define the side edges of the window and said window facing toward a source of light.

(b) a transparent cover enclosing the window,

(c) a container having an absorptive surface,

(d) means removably supporting the container within the reflective radius of the reflector,

(e) thermal insulation extending about the reflector and walls,

(f) said curvalinear reflector including a curvature through a minor radius and a major radius about the bottom and rear walls of said container, the minor radius of the reflector being centered at the bottom rear corner of the container and extending rearwardly and upwardly therefrom a distance equal to the height of the container and the major radius of the reflector being centered at the bottom front corner of the container and extending rearwardly therefrom at least half the distance to the tangent of the minor radius and downwardly and forwardly therefrom beneath the container, and

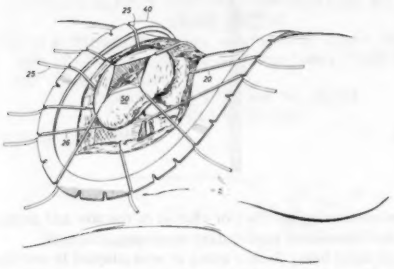
(g) said reflector including a forward extension extending from the lower edge of the reflector at an angle of approximately fifteen degrees to the horizontal.

4,274,398

SURGICAL RETRACTOR UTILIZING ELASTIC TUBES FRICTIONALLY HELD IN SPACED NOTCHES

Frank B. Scott, Jr., 6720 Bertner, Houston, Tex. 77030

Filed May 14, 1979, Ser. No. 38,469
Int. Cl.³ A61B *17/02*
U.S. Cl. 128—20 **1 Claim**



1. A surgical retractor for use in performing surgery upon a portion of the body having a surface contour, which comprises:

a generally annular frame conformed to fit the surface contour of the portion of the body to be operated upon, said frame having a periphery, said periphery having a plurality of notches having a width and depth spaced thereabout;

a stay which includes an elastic member having a length and a width and tissue holding means attached thereto, wherein the width of said elastic member is greater than the width of said notches such that said elastic member is held in place by friction when inserted into one of said notches; and

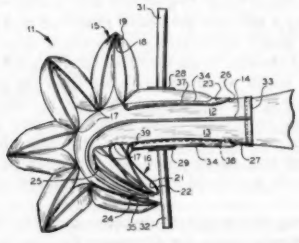
said elastic member includes a section of elastic tubing and said tissue holding means including a hook having a handle portion inserted in said tubing.

4,274,399

THERAPEUTIC APPLIANCE FOR FLEXING JOINTS

Thomas A. Mummert, Perrysburg, Ohio, assignor to Jobst Institute, Inc., Toledo, Ohio

Filed Jan. 29, 1980, Ser. No. 116,489
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—26 **21 Claims**



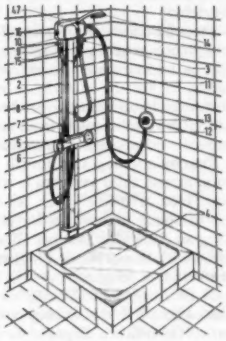
1. A therapeutic appliance for flexing an animal body joint comprising a flexible and non-extensible member for positioning on portions of the animal body in overlying relationship to the joint; means securing said member to portions of the animal body on each side of the joint; a plurality of chambers of fluid impervious flexible material having proximate side walls, said chambers being mounted on the side of said member spaced from the underlying body portion and secured at said proximate side walls to said member at points on opposite sides of the joint, said chambers having a wall of greater length between said points which are adjacent than the spacing of said points on said member; and means to admit pressurized fluid to said chambers.

4,274,400

MASSAGE SHOWER HAVING A GUIDE RAIL

Heinz G. Baus, Ulmenweg 46, CH-3601 Thun, Switzerland

Filed Nov. 29, 1979, Ser. No. 98,349
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852265
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—53 **9 Claims**



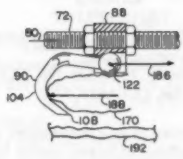
1. Massage shower with a substantially vertical guide rail comprising a massage head for delivering service water, said massage head being automatically displaceable upwardly and downwardly along the guide rail and fixable in a selective position thereon, and means driven and controlled by the service water for driving the massage head in longitudinal direction of the guide rail, said means for driving the massage head in longitudinal direction of the guide rail being constructed as a reversing drive comprising a turbine housing, a turbine wheel mounted for rotation in said turbine housing and means, including a slide valve, for selectively supplying service water in two tangential directions corresponding to opposite rotary directions of the turbine wheel.

4,274,401

APPARATUS FOR CORRECTING SPINAL DEFORMITIES AND METHOD FOR USING

Don B. W. Miskew, 422 Ridge Ave., Winnetka, Ill. 60093

Filed Dec. 8, 1978, Ser. No. 967,599
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—69 **34 Claims**



1. A method for correcting scoliosis and rotational deformities of the spine by posterior surgical procedures, which method comprises:

surgically exposing the spine posteriorly;

hooking onto the cephalad side of a lamina of a first vertebra (**170***f*) on one side of the spinous processes of said spine with a first hook (**90***f*);

hooking onto the caudad side of a lamina of a second vertebra (**170***e*) on said one side of the spinous processes of said spine with a second hook (**90***e*);

hooking onto a first transverse process (**184***b*) on said one side of said spinous processes of said spine of a third vertebra that is intermediate of said first and second vertebrae with a third hook (**90***h*);

applying a first force to said first (**170***f*) and second (**170***e*) vertebrae by changing the distance between said first (**90***f*) and second (**90***e*) hooks;

applying a second force to said third vertebra that moves said first transverse process (**184***b*) towards one (**170***f* or **170***e*) of the other two said vertebrae, and that moves said first transverse process (**184***b*) posteriorly thereby rotating said third vertebra;

hooking onto a second transverse process (**184***a*) on said one side of said spinous processes of said spine of a fourth vertebra that is intermediate of said second and third vertebrae; and

applying a third force to said fourth vertebra that comprises moving said fourth vertebra away from said third vertebra and that moves said second transverse process (**184***a*) posteriorly thereby rotating said fourth vertebra in the same direction as said third vertebra is rotated.

4. An apparatus (**166***a* or **166***b* of FIG. **26**) of the type used in the correction of spinal deformities by posterior surgical procedures, having an elongated member (**72***a* or **72***b* of FIG. **26**, or **72** of FIG. **9**) with first (**174***a* or **174***b*) and second (**178***a* or **178***b*) ends and with a longitudinal axis (**80** of FIG. **9**), having a first hook (**90***a* or **90***e* of FIG. **26**, or **90** of FIGS. **15** and **16**) that includes both a first attaching portion (**100**) and a first hooking portion (**104**) that is disposed around a first hook axis (**106**), having a second hook (**90***b* or **90***f* of FIG. **26**, or **90** of FIGS. **15** and **16**) that includes both a second attaching portion (**100**) and a second hooking portion (**104**) that is disposed around a second hook axis (**106**), and having means for operatively attaching said first and second hooks (**90**) to said elongated member with said hooking portions (**104**) opening substantially toward opposite ones (**174***a* and **178***a*, or **174***b* and **178***b*) of said ends of said elongated member (**72***a* or **72***b*), and for longitudinally positioning one of said hooks (**90**) with respect to the other of said hooks (**90**), the improvement which comprises:

said means for operatively attaching said first hook (**90**) to said elongated member (**72**) comprises means (**88** of FIGS. **9–14**) for operatively attaching said first attaching portion (**100**) to said elongated member (**72**) at a radially spaced distance from said longitudinal axis (**80**), for permitting said first attaching portion (**100**) to move circumferentially (**120** of FIG. **10**) with respect to said longitudinal axis (**80**) at said radially spaced distance therefrom, and for permitting said first attaching portion (**100**) to move rotationally (**118** of FIG. **10**) about a pivot axis (**116** of FIGS. **9–11**) that is substantially parallel to longitudinal axis (**80**) and that is at said radially spaced distance from said longitudinal axis (**80**).

4,274,402
NOSE SPLINT

Ronald D. Shippert, Englewood, Colo., assignor to The Denver Splint Company, Littleton, Colo.

Filed May 3, 1979, Ser. No. 35,918
Int. Cl.[3] **A61F** *5/04*
U.S. Cl. 128—89 R **4 Claims**

1. A splint for application to a traumatized nose of a human body to prevent swelling, including bones to be knitted together, said splint comprising:

a base layer of thin, flexible, resilient material;

a layer of adhesive on one side of said resilient material and adaptable to be adhesively secured to the traumatized portion;

a layer of removable material overlying said adhesive layer prior to application of said splint to the traumatized nose of the human body to protect the adhesive layer; and

a restraining layer of malleable metallic material attached permanently to the other side of said resilient material, said restraining layer being manually formable in situ to correspond to the shape of the traumatized portion and securable in place against the nose by said adhesive layer

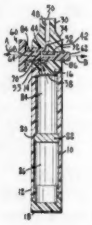
to minimize any swelling or change in the size and shape of the traumatized nose during recovery; and

said base layer being thicker along an area adapted to overlie the bridge of a tramatized nose.

4,274,403
INHALER

Roger L. Struve, P.O. Box 12573, New Brighton, Minn. 55112

Filed Aug. 29, 1979, Ser. No. 70,733
Int. Cl.[3] **A61M** *15/00*
U.S. Cl. 128—203.15 **15 Claims**



1. An inhaler for administering a powdered drug nasally, which comprises:

(a) storage means for containing a quantity of the powdered drug, wherein the storage means includes:

(i) an elongate body divided into first and second chambers by a moisture permeable plug, said first chamber being suited for receiving a powdered drug and said second chamber being suited for receiving a dessicating agent which withdraws moisture from the powdered drug, wherein said second chamber is closed to the external environment and opens only into said first chamber, through said moisture permeable plug;

(ii) a feed hole opening into said first chamber through which the powdered drug may be removed therefrom; and

(b) dispensing means operatively connected to the feed hole of the storage means for dispensing the powdered drug nasally, wherein the dispensing means comprises:

(i) nozzle means suited to be received in one of the nasal passages of the user;

(ii) means for measuring and transferring a predetermined charge of the powdered drug from the storage means to the nozzle means, wherein the pre-determined charge has a volume less than the stored quantity of the powdered drug originally contained in the storage means;

(iii) vent means for allowing ambient air to be drawn into the nozzle means for carrying the powdered charge

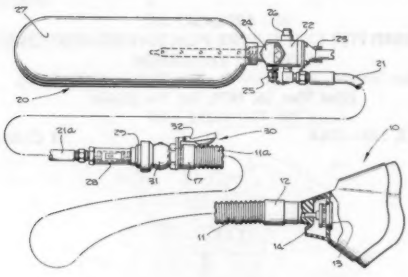
therein upwardly into the nasal passage of the user upon inhalation of the user; and

(iv) means for positively sealing the feed hole of the storage means from the external environment whenever the inhaler is not in use so that the powdered drug contained therein is stored in an air-tight manner.

4,274,404
OXYGEN SUPPLY SYSTEM CONTROLLED BY USER EXHALATION

Albert R. Molzan, Alhambra, and James D. Cleary, Monrovia, both of Calif., assignors to American Safety Flight Systems, Inc., Glendale, Calif.

Filed Apr. 13, 1979, Ser. No. 29,824
Int. Cl.³ A62B 7/00
U.S. Cl. 128—204.25 **2 Claims**



1. In a constant-volume oxygen supply system including a source of pressure regulated oxygen, an oxygen inhalation means for human use for inhalation of oxygen and exhalation to atmosphere, and fluid conduit means for connecting said source with said inhalation means, the improvement comprising the provision of:

an inhalation valve means, disposed in said inhalation means, and fluidly connected to said conduit means, for normally opening to allow oxygen to flow to said inhalation means from said oxygen source at a relatively constant volume flow rate under the fluid pressure of oxygen normally in said conduit means, and for closing on exhalation of the human user into the inhalation means, said closing of said inhalation valve means by exhalation resulting in a buildup of oxygen pressure in said conduit means, whereby oxygen from said source is supplied to the human user at a predetermined volumetric flow rate, without requiring any effort by the human user, until the user exhales;

oxygen flow control means fluidly connected into said conduit means for supplying oxygen and for shutting off oxygen flow from said source to said inhalation means when in respective oxygen flow supplying and shut-off positions; and

pressure responsive actuator means, for actuating said control means to said oxygen supplying position solely in response to said source pressure and to said oxygen flow shut-off position when said pressure buildup reaches a predetermined level, thereby preventing further pressure buildup in said conduit means, whereby the human user is able to exhale without having to overcome the pressure level of said oxygen source, and for providing an oxygen flow path between said oxygen supply and said inhalation means when said inhalation means is open;

said oxygen flow control means including an oxygen flow restrictor nozzle means having an outlet orifice disposed in said conduit means and fluidly connected to said oxygen source for restricting the volume rate of fluid flow of oxygen through said conduit means to supply oxygen at a constant volume rate of fluid flow to said inhalation means;

said pressure responsive actuator means including a pressure responsive diaphragm means concentrically disposed in said conduit means about said nozzle means and secured to said nozzle means and said conduit means, said diaphragm means communicating with atmosphere at the upstream side thereof and communicating with pressure in said conduit means at the downstream side thereof, said actuator means further including valve seat means extending from said diaphragm means and disposed adjacent said outlet orifice to abuttingly engage and close said nozzle means in response to said oxygen pressure buildup; and

air inlet means connected into said conduit means for introducing ambient air into said inhalation means in response to user inhalation at a fluid volume flow rate in excess of said constant volume flow rate of oxygen being supplied to said user through said nozzle means whereby

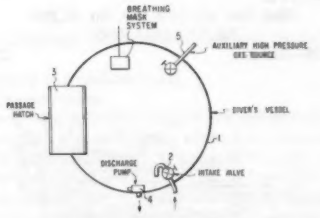
(i) the user receives oxygen at said constant volume flow rate through said normally-open inhalation means without any inhalation effort, and

(ii) the user receives a mixture of air and oxygen at a greater volume than said constant volume by inhaling a volume of fluid greater than said constant volume of oxygen supplied to the user.

4,274,405
METHOD FOR VARYING THE AMBIENT PRESSURE IN A VESSEL

Thomas C. Schmidt, Lake Park, and Charles R. Yemington, Palm Beach Gardens, both of Fla., assignors to Perry Oceanographics, Inc., Riviera Beach, Fla.

Filed Jun. 20, 1979, Ser. No. 50,487
Int. Cl.³ A62B 11/36
U.S. Cl. 128—205.26 **21 Claims**



1. A method for varying the ambient pressure of the environment of an individual totally enclosed within a vessel between an upper and lower pressure value, comprising: providing the vessel with a mass of gas and with a mass of liquid, the mass of liquid being sufficient to fill at least a substantial part of the vessel when the pressure is at the upper value; and varying the quantity of liquid in the vessel in order to cause the pressure therein to vary correspondingly between the upper and lower values.

4,274,406
TRACHEOTOMY MASK

Victor L. Bartholomew, 40843 Marion, Hemet, Calif. 92343

Filed Sep. 4, 1979, Ser. No. 72,128
Int. Cl.³ A61M 15/00
U.S. Cl. 128—206.21 **7 Claims**

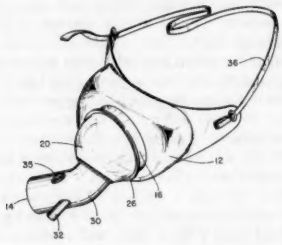
1. An oxygen mask comprising

a mask body for being secured against a patient's face or throat and in sealing engagement therewith, and having an enlarged circular port,

rotatable adapter extending forwardly of said mask body having a spherical surface portion and secured on said body at said enlarged port and rotatable about a single, first axis extending normal to a plane extending across said enlarged port, and having a pipe attachment port through said spherical surface portion, the center of which pipe

attachment center of which port is offset relative to said first axis, and

a pipe angled between first and second ends thereof, a first end being rotatably secured on said adapter in said pipe attachment port on said spherical surface portion and rotatable about a single second axis whereby each of said ends is directed along a different axis,



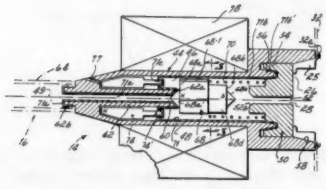
said first and second axes having an acute angle therebetween whereby said port on said spherical surface and said angle between said first and second ends of said pipe are such that said adapter and said pipe are cooperatively rotatable so that said second end of said pipe may be pointed in substantially any direction forwardly of said mask body.

4,274,407

FLUID INJECTION SYSTEM

John A. Scarlett, Southfield, Mich., assignor to Med Pump, Inc., Lansdowne, Pa.

Filed Nov. 13, 1979, Ser. No. 93,288
Int. Cl.[3] A61J *7/00*
U.S. Cl. 128—213 R **27 Claims**



1. A fluid injection system comprising:

a fluid reservoir having a fluid exit port,

fluid pressurization means for pressurizing fluid in said reservoir to provide pressurized fluid at said reservoir exit port,

a conduit insertable in the body having a passage through which fluid passes for injection into the body,

a combined valve and pump assembly having

(a) an internal fluid charge accumulation chamber of predetermined constant maximum volume provided with a fluid inlet port in fluid communication with said reservoir exit port and a fluid outlet port in fluid communication with said conduit passage,

(b) a valve closure element located within said chamber and movable between a charge accumulation position in which said closure element seals said fluid outlet port and unseals said fluid inlet port to facilitate admission of pressurized fluid into said chamber to accumulate said charge, and a charge injection position in which said closure element seals said inlet port and unseals said outlet port to permit said accumulated charge to be pumped from said chamber to said conduit for injection.

(c) a pump element located for movement through a pumping stroke of preset length within said chamber between a nonpumping position in which the volume of said chamber is at said maximum to facilitate accumulation of a fluid charge of preset volume in said chamber when said closure element is in said charge accumulation position, and a pumping position in which the volume of said chamber is reduced to less than said maximum to transfer said accumulated fluid charge of preset volume from said chamber into said conduit when said closure element is in said charge injection position, and

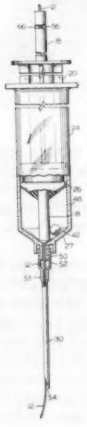
(d) actuating means for selectively alternatively placing said closure element and said pump element (1) in said charge accumulation and nonpumping positions, respectively, to facilitate transfer of a fluid charge from said pressurized reservoir to said chamber, or (2) in said charge injection and pumping positions, respectively, to facilitate pumped transfer of said accumulated fluid charge from said chamber to said conduit for injection into said body.

4,274,408

METHOD FOR GUIDE-WIRE PLACEMENT AND NOVEL SYRINGE THEREFOR

Beatrice Nimrod, 24 Wallace St., New Britain, Conn. 06051

Filed Mar. 26, 1979, Ser. No. 23,644
Int. Cl.[3] A61M *5/00*
U.S. Cl. 128—214.4 **11 Claims**



1. A syringe device for inserting a catheter guide wire comprising:

a. a hollow body member providing a cavity therewithin and an end wall at one end thereof providing a hub portion and having an opening extending therethrough;

b. a needle on said hub portion and extending therefrom, said needle having a needle lumen extending therethrough and aligned with said opening in said end wall for communication of said lumen with said cavity;

c. a plunger extending through an opening in the opposite end of said body member and slidably received in said cavity, the peripheral surface of said plunger being in sliding and sealing engagement with a cooperating peripheral surface of said body member, said plunger having a plunger passage extending therethrough in alignment with said opening in said one end wall;

d. a feeder tube slidably received in said plunger passage, extending outwardly of said plunger, having inner and outer ends, and having a feeder passage extending from said outer end through said feeder tube to said inner end; and

e. closure means normally sealing said plunger passage on the needle side of said feeder tube but permitting said feeder tube to pass therethrough upon application of force to said feeder tube in the direction of said needle, and

thereby against said closure means, said inner end of said feeder tube thereby being slidable to a position adjacent said hub for communication of said feeder passage with said needle lumen to guide a catheter guide wire introduced through said outer end of said feeder tube into said needle lumen.

4,274,409

DISPENSING OF FLUENT MATERIALS

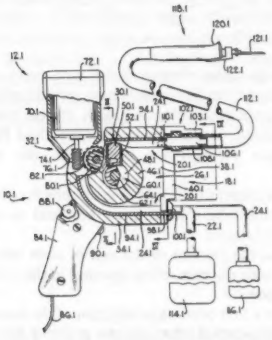
George E. Bush, 65 Hillman St., Woodmead East, Sandton, Transvaal Province, South Africa

Filed Jan. 18, 1979, Ser. No. 4,253

Claims priority, application South Africa, Feb. 3, 1978, 78/0674

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—215 **13 Claims**



1. A dispensing device for use in dispensing measured quantities of fluent materials through a plurality of resiliently compressible dispensing tubes, the device comprising:

a housing having a tube zone for receiving a plurality of dispensing tubes;

collapsing means for collapsing, in compression zones, dispensing tubes when located in the tube zone;

said collapsing means including a plurality of displaceable compression members slideably connected to said collapsing means and projecting beyond the periphery thereof;

displacement means for displacing the collapsing means to advance the compression zones along compression paths to dispense fluent materials through said dispensing tubes;

a plurality of independently adjustable cam members adapted to cooperate with the respective compression members to control the effective length of the compression paths during operation of the collapsing means.

4,274,410

INTRAVAGINAL CONTRACEPTIVE AND DRUG RELEASE DEVICE AND METHOD FOR MAKING AND USING SAME

Milos Chvapil, Tucson, Ariz., assignor to Medi-Coll, Inc., Tucson, Ariz.

Division of Ser. No. 720,563, Sep. 7, 1976, abandoned. This application Jan. 16, 1980, Ser. No. 112,157

Int. Cl.³ A61F *13/20*

U.S. Cl. 128—270 **12 Claims**

1. A contraceptive device for insertion in the upper vault of the vagina proximate the cervix comprising:

(a) a reconstituted collagen mass having a size and shape for insertion in the upper vault of the vagina;

(b) said collagen mass having a porous sponge structure with pore diameters ranging from 80u to 1400u.

4,274,411

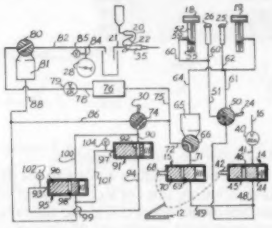
FLUID OPERATED OPHTHALMIC IRRIGATION AND ASPIRATION DEVICE

Robert S. Dotson, Jr., 535 Peabody Sq., Memphis, Tenn. 38104

Filed Mar. 30, 1979, Ser. No. 25,537

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—276 **5 Claims**



1. An ophthalmic irrigation and aspiration device comprising;

(a) a source of irrigation liquid,

(b) a vacuum source,

(c) a handpiece, including a needle for insertion into the site of use, said handpiece being adapted to carry outlets for the irrigation liquid and the vacuum from the respective sources thereof,

(d) a vacuum control valve for selectively connecting said vacuum outlet in the handpiece to said vacuum source,

(e) pulsing means for cyclically operating said vacuum control valve,

(f) irrigation control means for controlling the flow of said irrigation liquid through the outlet for irrigation liquid in said handpiece, characterized in that said irrigation control means includes first clamping means for stopping the flow of said irrigation liquid through said handpiece,

(g) aspiration control means for controlling the application of said vacuum source through said handpiece,

(h) fluid operated means for releasing said first clamping means,

(i) a source of fluid under pressure,

(j) first valve means for selectively connecting said source of fluid under pressure to said fluid operated means for releasing said first clamping means,

(k) a fluid operated vacuum generating device,

(l) a second valve for selectively directing fluid under pressure from said first valve to said vacuum generating device,

(m) a first toggle valve for selectively connecting said fluid under pressure to said pulsing means and to said vacuum control valve,

(n) said pulsing means including a first fluid operated valve having an input, an output, and a valve operating port, a second fluid operated valve having an input, an output, and a valve operating port,

(o) said output of said first fluid operated valve being in

communication with said valve operating port of said second fluid operated valve, and

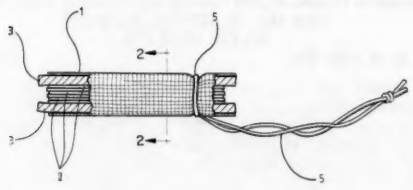
(p) said output of said second fluid operated valve being in communication with said valve operating port of said first fluid operated valve, said output of said second fluid operated valve being connected to said vacuum control valve.

4,274,412

TAMPON CONTAINING BLENDED SUPERABSORBENT MATERIAL

Jared A. Austin, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 22, 1979, Ser. No. 87,221
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **8 Claims**



1. A tampon comprising in combination:

(a) an absorbent core including a plurality of discrete essentially planar, abutting plies of a compressed blend of superabsorbent fibers and short cellulosic fibers selected from the class consisting of wood pulp fibers and cotton linters;

(b) an absorbent layer located on the bottom and the top of said core having textile length fibers;

(c) a fluid permeable outer cover surrounding the top and sides of the absorbent surfaces; and

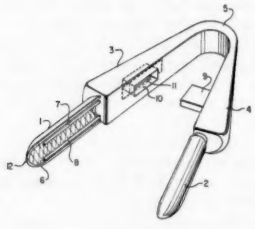
(d) withdrawal means attached to one end of the tampon.

4,274,413

DEPILATORY TWEEZER

Robert H. Hahn; Neva N. Hahn, both of 333 Pembroke Mews, Toronto, Canada (M5A 2N6), and Noah Salzman, 7461 Kingsley Rd., Cote St. Luc, Canada (H4W 1P4)

Filed Dec. 1, 1978, Ser. No. 965,672
Claims priority, application Canada, Oct. 6, 1978, 312902
Int. Cl.³ A61B *17/41*
U.S. Cl. 128—303.13 **20 Claims**



1. A depilatory tweezer comprising means for retaining a hair between a pair of electrodes, said means including:

(i) a pair of arms resiliently biased away from each other, each of said arms having a section adjacent its end parallel to the other at their closest adjacency,

(ii) said sections having electrically conductive surfaces,

(iii) insulative spacer means extending outwardly from one of said surfaces toward the other, the spacer means extending only so far as to allow retention of a hair between and in contact with the electrically conductive surfaces when the arms are in closest adjacency, without interference by the insulative spacer means, and

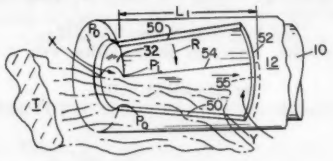
(iv) means for conducting radio frequency current to said electrically conductive surfaces.

4,274,414

SURGICAL INSTRUMENT

Lanny L. Johnson, Okemos, Mich., and Leonard J. Bonnell, Medford, Mass., assignors to Dyonics, Inc., Woburn, Mass.

Filed Feb. 21, 1979, Ser. No. 13,407
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **12 Claims**



1. In a surgical instrument of the type comprising coaxial inner and outer tubes having coacting cutting edges in a distal region, the inner tube being rotatably driven while the outer tube is stationary, and means to maintain fluid flow from the cutting region through the instrument, the improvement wherein

a limited segment of the side of each tube is open, said opening of each tube extending to the distal extremity of the side of said tube,

and at least the portion of the end of each tube that corresponds with the respective opening in the side of the tube being open,

whereby at a first position of rotation of the inner tube, body tissue can protrude through the end and side openings of said tubes into the volume of the inner tube,

said tubes bounding said side openings defining initial tissue-penetrating sharp pointed portions located where the tubes first come together during rotation of said inner tube, said pointed portions located at the distal extremity of the sides of the tubes,

and cutting edges extend from said initial tissue-penetrating pointed portions both transversely across the end of and longitudinally along the sides of the tubes,

whereby following initiation of gripping and cutting at said pointed portions located inwardly on the tissue from an exposed edge of the tissue, cutting can proceed in two angular directions toward the exposed edge of the tissue to complete the cut.

4,274,415

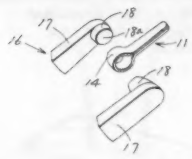
SURGICAL CLIP AND ITS ASSEMBLY

Sakumi Kanamoto, Mukoshi, and Akio Ishida, Kameokashi, both of Japan, assignors to Maruho Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 765,742, Feb. 4, 1977, abandoned. This application Jan. 23, 1979, Ser. No. 5,867
Claims priority, application Japan, Jul. 16, 1976, 51-95530; Jul. 21, 1976, 51-87824; Jul. 23, 1976, 51-99088
Int. Cl.³ A61B *17/12, 17/28*
U.S. Cl. 128—321 **6 Claims**

6. A combination of a blood circulation stopping clip and a forceps for opening and closing said clip in which said blood circulation stopping clip is formed of a resilient strip piece and comprises a pair of elongated clip legs for clipping a blood vessel therebetween and an annular bight portion connecting said clip legs at their respective one ends, each of said clip legs being formed in an elongated tongue shape having tapered side edges, each of said clip legs having opposed surfaces which are normally urged to be in contact with each other substantially

over their whole area owing to the resilience of said bight portion which can be opened when the inner diameter of said bight portion is forcibly spread and said forceps for opening and closing said clip is provided with a pair of frusto-conical tips at its working ends, said frusto-conical tips having round end surfaces opposed to each other and being engageable with said bight portion of said clip to forcibly spread said bight



portion when said forceps is closed, the outer diameter of the frusto-conical tips of said forceps being slightly greater than the inner diameter of the annular bight portion of said blood circulation clip so that the opposed surfaces of said clip legs of said clip may be opened by a fixed angle at a point where the smaller round end surfaces of the frusto-conical tips contact each other whenever the frusto-conical tips of said forceps are inserted into said annular bight portion to the fullest extent.

4,274,416

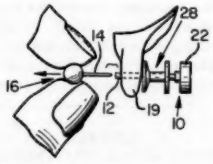
METHOD OF USING A GUIDE FOR REPLACEMENT OF EARRINGS IN PIERCED EARS

David J. Sorensen, 1012 NE. Knoles Dr., Vancouver, Wash. 98665

Division of Ser. No. 901,181, Apr. 28, 1978, abandoned. This application Nov. 20, 1979, Ser. No. 95,974

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—330 **4 Claims**



1. The method of removing and reinstalling a stud type earring in a pierced ear comprising:

(a) placing over the exposed extremity of the stud of the earring, which is in place in an opening in the ear and has its clasp removed, a guide having an elongate tubular rod with an inside diameter arranged to loosely receive said stud;

(b) forcing said guide completely over the stud and through the opening in the ear;

(c) thereafter removing the earring from said guide and the ear leaving said guide in place in the ear;

(d) reinserting said stud into said rod and back through the opening;

(e) removing said guide from the opening leaving said stud located therein; and

(f) placing said clasp back onto said stud.

4,274,417

INSTRUMENTS FOR USE IN THE MEASUREMENT OF GASES IN BODY FLUIDS

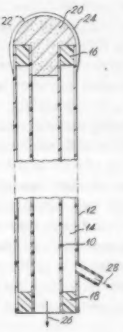
David T. Delpy, London, England, assignor to National Research Development Corporation, London, England

Filed Sep. 18, 1979, Ser. No. 76,724

Claims priority, application United Kingdom, Sep. 22, 1978, 37801/78

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—632 **6 Claims**



1. An instrument for use in the measurement of gases in body fluids comprising a flexible catheter having an inner tube within an outer tube, the tubes being of such diameters that there is a substantially cylindrical passage between the tubes; sealing means to seal the cylindrical passage at each end of the catheter; at one end of the catheter a gas permeable closure covering one end of the inner tube, and at the other end of the catheter first connection means to allow connection of the cylindrical passage to a gas flow system and second connection means to allow connection of the inner tube to a gas analysis apparatus.

4,274,418

ELECTROCHEMICAL MEASURING DEVICE

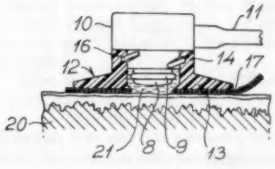
Peter K. R. Vesterager, Maalov, and Borge Jeppesen, Glostrup, both of Denmark, assignors to Radiometer A/S, Copenhagen, Denmark

Continuation of Ser. No. 802,113, May 31, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,689

Claims priority, application Denmark, Jun. 1, 1976, 2398/76

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—635 **8 Claims**



1. An electrochemical measuring device for transcutaneous measurement of the partial pressure of a gas, said electrochemical measuring device comprising:

a sensor unit including an electrochemical type sensor responsive to a gas to be measured, and a semi-permeable membrane permeable by the gas to be measured and covering the electrochemical type sensor for permitting the gas to be measured to reach the electrochemical type sensor;

an annular mounting member having a front annular skin

opposing surface for being adhered in use to the skin of a patient and an opposite back for being spaced in use from the skin of the patient, a stop surface backward of said front annular skin opposing surface, and an open bore extending through the annular mounting member and opening at the front annular skin opposing surface and at the back of the annular member; and

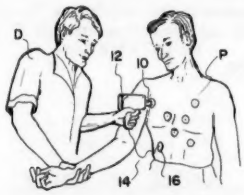
connecting means for releasably connecting said sensor unit to the back of said annular mounting member in a position to close the back opening of the bore and engage said stop surface and oriented with said semi-permeable membrane within said open bore and said connecting means being effective to permit releasing of said sensor unit from said annular mounting member and to permit connection of said sensor unit to said annular mounting member while said annular mounting member is adhered in use to the skin of a patient, said stop surface being positioned relative to said skin opposing surface such that when said sensor unit is engaged therewith said semi-permeable membrane is spaced a distance of 0.05 to 0.5 mm back from said skin opposing surface of said annular mounting member, wherein said sensor unit closing the back opening of said bore, the walls of said bore and the skin of a patient together define a measuring chamber for containing gases which permeated the skin of the patient and entered the measuring chamber including the gas which is to be measured when the measuring device is adhered in use to the skin of a patient.

4,274,419

SKIN PREPARATION DEVICE AND METHOD USED IN THE APPLICATION OF MEDICAL ELECTRODES

Hak W. Tam, Kirkland, and Vernon E. Modes, Kent, both of Wash., assignors to Quinton Instrument Co., Seattle, Wash.

Filed Oct. 19, 1979, Ser. No. 86,590
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—639 **17 Claims**



1. A method of preparing the skin of a patient to provide proper electrical contact between the skin and a medical electrode to be secured to the skin of the patient, comprising:

applying a reference electrode to a prepared site on the skin of the patient;

abrading an unprepared site on the skin of the patient with an abrasive pad impregnated with an electrolyte;

measuring the difference of the impedance between the abrasive pad and the reference electrode during abrading of the skin with the abrasive pad; and

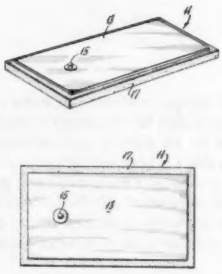
terminating abrasion with the abrasive pad when the difference of the impedance between the abrasive pad and the reference electrode reaches a preset value.

4,274,420

MONITORING AND STIMULATION ELECTRODE

Alan C. Hymes, Hopkins, Minn., assignor to LecTec Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 849,405, Nov. 7, 1977, Pat. No. 4,125,110, which is a continuation of Ser. No. 785,225, Apr. 6, 1977, abandoned, which is a continuation of Ser. No. 635,008, Nov. 25, 1975, abandoned. This application Oct. 12, 1978, Ser. No. 950,625
The portion of the term of this patent subsequent to Nov. 14, 1995, has been disclaimed.
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—641 **15 Claims**



1. An electrode for establishing electrical connection to a patient's skin, comprising:

an electrically conductive backing and current distribution member;

electrical terminal means attached to said member, said terminal means being adapted for connection of the electrode to an electrical wire; and

a substrate attached to said backing and current distribution member for interfacing with the patient's skin, said substrate comprising a homogeneous material having adhesive properties for securing the electrode to the skin, said substrate being sufficiently pliant to permit formation of the shape of the electrode to the body contours, said substrate being sufficiently firm to prevent penetration of the body contours through the substrate thereby preventing contact of the backing member with the skin, and said substrate being uniformly conductive thereby providing a homogeneous conducting surface to the skin, said substrate comprising a karaya gum matrix, said matrix supporting an electrically conductive fluid, said fluid comprising an organic fluid and being a continuous phase.

4,274,421

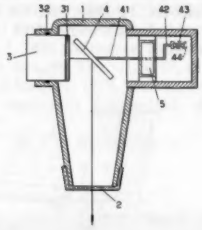
ECHO SOUND APPARATUS INCLUDING AN OSCILLATING MIRROR FOR USE IN MEDICAL DIAGNOSIS

Jacques Dory, Meaux, France, assignor to C. G. R. Ultra Sonic, France

Filed Nov. 1, 1978, Ser. No. 956,706
Claims priority, application France, Nov. 23, 1977, 77 35201
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—660 **5 Claims**

1. An echo sounding apparatus comprising: a fluidtight housing having side walls and a bottom wall, at least part of the surface of said bottom wall being transparent to ultrasonic waves; a transmitting-receiving ultrasonic probe fixedly mounted in a surface portion of said side-walls and having a transmitting-receiving surface within said housing substantially at right angles with the bottom wall; a liquid contained in the housing and adapted to transmit the ultrasonic waves from the probe to the bottom wall; an electric motor, of a type having no rotating contacts, fixedly mounted within the hous-

ing, and immersed in the said liquid; a spindle, supported and rotated by the said motor, along an axis at right angles with the said transmitting-receiving surface; a plane mirror, rotatably mounted about said spindle within said housing and facing said transmitting-receiving surface, said mirror being inclined at 45° with respect to said spindle; control means for controlling the



said motor so as to generate an oscillatory conical motion of the mirror about the said axis, said control means comprising means, immersed in the liquid and having no contact with the mirror, for providing an electrical signal corresponding to the angular position of the mirror; pulse transmitter-receiver circuit means connected to the said probe and display means, coupled to the transmitter-receiver circuit means.

4,274,422

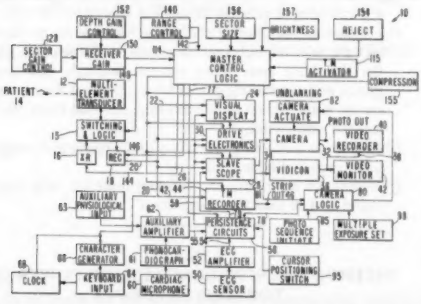
SECTOR SCANNER DISPLAY AND RECORDING SYSTEM FOR ULTRASONIC DIAGNOSIS

Weston A. Anderson; Lloyd D. Clark, both of Palo Alto, and William L. Beaver, Los Altos Hills, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 673,500, Apr. 5, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,323

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—661 **9 Claims**



1. An ultrasonic patient diagnostic device comprising means including a phased array transducer means for generating and displaying a fan shaped, two-dimensional, real time, operator viewable image of a region of a patient being examined from ultrasonic energy directed into and reflected out of said patient region, and means responsive to said means for generating said image for effecting, simultaneously with said real time image, a TM recording corresponding to a preselected region of said real time image viewable during patient examination.

4,274,423

CATHETER TIP PRESSURE TRANSDUCER

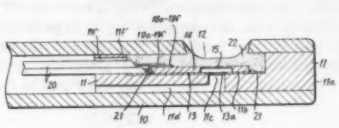
Masakazu Mizuno, Nagoya; Isemi Igarashi, Aichi, and Hazime Inagaki, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Dec. 8, 1978, Ser. No. 967,815

Claims priority, application Japan, Dec. 15, 1977, 52-150885

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—675 **28 Claims**



1. A catheter tip pressure transducer comprising: a needle tube having a pressure inlet hole opened in a side wall thereof proximate an end thereof;

a support member disposed within said needle tube said support member being positioned opposite said pressure inlet hole of said catheter;

a pressure sensor disposed within said needle tube, said pressure sensor comprising a semi-conductor block, said block including a recess located opposite to said support member, a thinner flat portion defined by said recess and being a pressure-sensitive diaphragm and located opposite to said pressure inlet hole, and a remaining thicker portion formed integrally with said thinner flat portion, said thicker portion of said pressure sensor being seated on said support member without being rigidly attached thereto and said diaphragm being located below the outer surface of said side wall of said needle tube; and

at least one strain gauge disposed on a surface of said pressure-sensitive diaphragm opposite to a face of said diaphragm facing said recess, said at least one strain gauge having lead wires, whereby the pressure at said inlet hole acts on said diaphragm and said at least one strain gauge to change the electrical characteristics of said at least one strain gauge in proportion to said pressure, and

said pressure sensor is unaffected by thermal stresses in said support member because of said unrigid attachment.

4,274,424

DEVICE FOR AUTOMATICALLY WINDING A BLOOD PRESSURE MEASURING CUFF

Shigenobu Kimura; Yoshiro Kubo; Shigeru Bando; Akio Ose; Yukuo Kinoshita; Ryoichi Higashizono, and Ikuo Hanamiya, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 7, 1979, Ser. No. 46,413

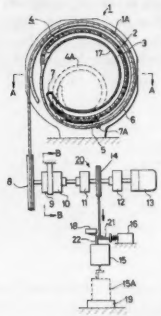
Claims priority, application Japan, Jun. 12, 1978, 53-69841

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—686 **8 Claims**

1. Apparatus for automatically winding a blood pressure measuring cuff around a part of the human body, comprising; a flexible band having a part fixedly secured to a surrounding member adapted to receive a part of the human body, said flexible band extending circumferentially along the inner wall of said surrounding member, one end of said flexible band pulled circumferentially to be wound around a part of the human body, a flexible fluid chamber provided along the inner wall of said flexible band interposed between said flexible band and a part of the human body, a weight connected to one end of said flexible band, weight hoisting means for hoisting said weight and, weight holding means for holding said weight at a

predetermined hoisting position, wherein a pulling force caused by said weight when said holding means is released is



applied to the one end of said flexible band to wrap said flexible band about a part of the human body.

4,274,425

MOUTHPIECE FOR A REDOX GAS MEASURING DEVICE

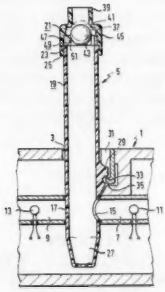
Dieter Lutz, Schweinfurt; Peter Krause, Schonungen; Axel Terveen, and Volker Eibl, both of Munich, all of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GMbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 30, 1979, Ser. No. 34,853

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820916

Int. Cl.³ A61B *5/08*

U.S. Cl. 128—719 **20 Claims**



1. Mouthpiece for a device for measuring the concentration of redox gases, especially alcohol, in exhaled air, comprising an axially elongated tubular member forming an axially extending passageway and having a first end forming an opening through which air is exhaled into the passageway and a second end, means formed on the outside surface of said tubular member for releasably securing said tubular member to the measuring device, valve means in combination with said tubular member forming a check valve within the passageway in said tubular member for permitting the flow of exhaled air from the first end toward the second end past said check valve while preventing an induced flow of air through the passageway around the check valve to the first end, said tubular member being closed at the second end thereof and having at least one outlet opening therefrom intermediate and spaced from said check valve and the second end of said tubular member, and the passageway in said tubular member between said outlet opening and the second end thereof forming a moisture chamber for collecting saliva at a location within said passageway downstream of the location of said outlet opening where the flow of exhaled air can enter the measuring device, and after use said mouthpiece being removable from the measuring device and being disposable.

4,274,426

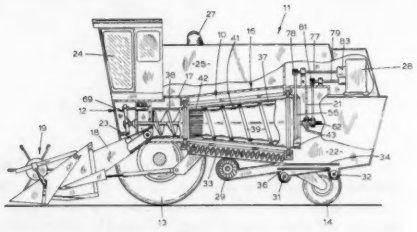
THRESHING APPARATUS

Dennis W. Williams, Rte. 1, Box 51, Toston, Mont. 59643

Filed Mar. 31, 1980, Ser. No. 135,256

Int. Cl.³ A01F *7/06*

U.S. Cl. 130—27 T **3 Claims**



1. Apparatus for threshing grain material and separating the threshed grain from the residual grain material comprising:

(a) an elongated supporting frame,

(b) a shaft extended longitudinally of and rotatably supported on said frame,

(c) a threshing unit mounted on said shaft for rotation therewith including a tapered cylindrical body member having a continuous peripheral surface and a rub bar helically extended about said surface,

(d) a rotatable grain separating cylinder having a peripheral surface tapered over the axial length thereof,

(e) means for rotatably mounting said separating cylinder on said frame in a coaxial concentrically spaced relation about said threshing unit, to form a threshing zone therebetween having an inlet and an outlet, said cylindrical body member and separating cylinder being substantially coextensive in axial length,

(f) concave grates and separating grates arranged circumferentially of and over substantially all of the peripheral surface of said grain separating cylinder,

(g) means for rotating said threshing unit and grain separating cylinder at relative rotational speeds,

(h) means for supplying the grain material to be threshed into the inlet of said threshing zone, with the clean grain in the threshing zone being moved through said concave grates and separating grates by centrifugal force, concurrently with the travel of the grain material from said inlet toward said outlet,

(i) means for collecting the clean grain passing through said separating cylinder, and

(j) means for removing the residual material only from the outlet end of said threshing zone.

4,274,427

METHOD OF INCREASING FILLING POWER OF TOBACCO PRODUCTS

Andrew T. Lendvay, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 938,118

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—293 **34 Claims**

25. An improved tobacco filler of expanded shredded tobacco wherein the improvement comprises expanded pectinaceous substances of said tobacco bound by multivalent salts, consisting 0.2% to 7.5% by dry weight of said tobacco filler, selected from the group consisting of aluminum sulfate, magnesium sulfate, diammonium magnesium sulfate, potassium alumi-

num sulfate, aluminum citrate, calcium acetate, calcium levulinate, calcium sulfamate and calcium gluconate individually and in combinations thereof, to retain said expansion.

4,274,428

MATERIAL WEB FOR THE MANUFACTURE OF FILTER RODS FOR TOBACCO PRODUCTS AND APPARATUS AND PROCESS FOR PRODUCING SUCH WEB

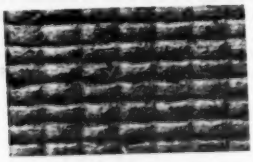
Paul A. Müller, 9497 Triesenberg 405, Liechtenstein, and Hans Muster, Seilerwis 1, 8606 Greifensee, Switzerland

Division of Ser. No. 844,389, Oct. 21, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,180

Claims priority, application Switzerland, Aug. 11, 1977, 9888/77

Int. Cl.³ A24D *3/04*

U.S. Cl. 131—331 **7 Claims**



1. A web of paper-like fibrous material adapted to be gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for tobacco products, said web being provided with:

closely-spaced narrow longitudinal corrugations wherein said material has been stretched laterally to loosen and expose fibers; and

closely-spaced generally-transverse narrow zones wherein said material has been compressed and compacted to produce a denser structure.

4,274,429

UMBRELLA

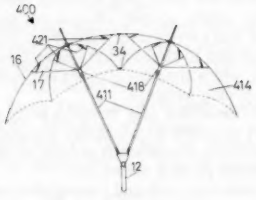
Ernst Kinski, Prinz-Georg-Strasse 94, 4000 Düsseldorf, Fed. Rep. of Germany

Division of Ser. No. 823,202, Aug. 9, 1977, Pat. No. 4,144,900. This application Oct. 10, 1978, Ser. No. 949,559

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637502; Jun. 28, 1977, 2729026

Int. Cl.³ A45B *19/00, 25/14*

U.S. Cl. 135—20 A **6 Claims**



1. An umbrella for the protection of persons against weather conditions comprising handle means enabling said umbrella to be gripped by a user, stick means attached at one end thereof to said handle means, a plurality of ribs pivotally mounted with said stick means, a canopy attached upon said ribs, slider means on said stick means slideably movable to open and close said canopy of said umbrella, a plurality of stays each pivotally mounted at opposite ends thereof, respectively to said ribs and to said slider means, said ribs extending from said stick means radially therefrom and being circumferentially distributed thereabout, with movement of said slider means on said stick means operating through said stays to cause pivotal motion of said ribs about said mounting on said stick means to open and close said canopy by stretching said canopy when said ribs are extended radially outwardly from said stick means, said canopy being brought to a folded condition about said stick means when said slider means is moved to bring said ribs in a generally parallel condition relative to said stick means, said umbrella further comprising tension springs which are engaged between each of said ribs and said stays, said spring means operating to spring load the angle between said stays and said ribs toward the open condition of said umbrella, with release of said slider operating to effect changes in the angle between said stays and said ribs as a result of the biasing force of said spring means to move said slider along said stick means toward the open position of said umbrella.

4,274,430

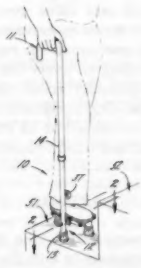
WALKING CANE APPARATUS

Cecil F. Schaaf, and Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Aug. 15, 1979, Ser. No. 66,531

Int. Cl.³ A61H *3/00*

U.S. Cl. 135—65 **7 Claims**



1. A walking cane apparatus for assisting a person in walking on generally level surfaces and also on stairs and the like comprising:

a cane having a lower end operable to contact a walking surface and having an upper end portion operable to be grasped by a person using the cane apparatus;

a support structure including a platform surface which is operable to receive and support a foot of a person using the cane apparatus when the platform surface is in a first, generally upwardly facing position; and

means for attaching the support structure to the cane near its lower end to permit placing the platform surface in its first position and in a second position generally nearer the cane than the first position.

4,274,431

FUEL VENT WITH GRAVITY VALVE

Russell D. Keller, 1750 SE. Risley, Milwaukie, Oreg. 97222

Filed Jan. 10, 1979, Ser. No. 2,242

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—43 **11 Claims**

1. A motor vehicle fuel tank vent apparatus comprising:

a vent body adapted to be secured within an opening in a liquid fuel tank on a motor vehicle and having a passageway with longitudinal axis extending through said vent body from a vent inlet to a vent outlet;

valve means including a movable valve member for controlling the flow of fluid through said passageway;

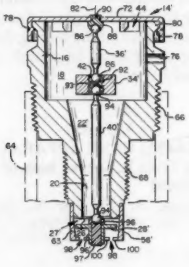
gravity operated control means for opening and closing said valve means in accordance with the position of the axis of said passageway so that said valve means is open when the vent body is upright and said axis is positioned substantially vertical, is closed when said axis is moved to an

angle greater than a predetermined angle with respect to said vertical position to prevent leakage and reopens when said axis returns to said vertical position;

said control means including a gravity operated weight member pivotally supported by a support means in a position above the valve means;

connector means for connecting said weight member to said valve member with a pivot connection between said connector means and said valve member for opening and closing said valve means by movement of said weight; and

said support means and connector means comprising a pair of link rods including an upper link rod and a lower link rod which are pivotally connected at one end to the weight by ball and socket connections, with the lower rod being pivotally connected at its other end to the valve member by a ball and socket connection.



4,274,432

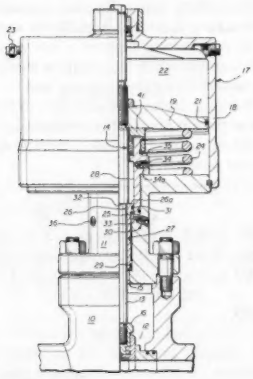
VALVE

Karl N. Tunstall, Farmers Branch, and M. L. Warren, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 21, 1980, Ser. No. 113,731

Int. Cl.[3] F16K *43/00*

U.S. Cl. 137—315 **6 Claims**



1. A valve comprising,

a valve body,

a bonnet on said valve body,

a valve member assembly including a valve member and valve stem in said body and bonnet movable between open and closed positions,

seal means between said bonnet and valve stem,

a back seat in said bonnet,

said valve member assembly including a back valve member cooperable with said back seat and when seated isolating said seal means from pressure fluid within the valve body,

means for moving said valve member assembly between open and closed positions,

a pressure chamber including an auxiliary piston means for moving said valve member assembly to a position seating said back valve member on said valve back seat, and

a port providing access to said pressure chamber from the exterior of the valve for pressurization of said pressure chamber from an auxiliary source whereby when said pressure chamber is pressurized said auxiliary piston means maintains said back valve member against said back seat and isolates pressure fluid within the valve body permitting repair of portions of said valve on the side of the back valve member remote from said valve member.

4,274,433

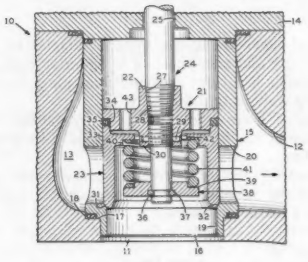
PACKED PLUG FOR A FLUID VALVE

Ira H. Schnall, Erie, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 956,742, Nov. 1, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,502

Int. Cl.[3] F16K *39/02*

U.S. Cl. 137—454.6 **10 Claims**



1. In a valve structure including a valve body having an inlet and outlet passage and an internal web portion intermediate the inlet and outlet passages, means arranged in said web portion forming a closeable flow path between said inlet and outlet passages, and a valve stem associated with said web portion, a valve plug apparatus to provide a leak-tight valve shut-off, characterized by

(a) a two-member valve plug comprising a lower plug member and an upper plug member,

(b) said lower and upper plug members being mounted in a generally axially spaced relation on said valve stem, whereby said two-member valve plug is controllable by the valve stem to close said closeable flow path means,

(c) packing means arranged between and held by said lower and upper plug members,

(d) at least one of said plug members being slidably associated with said valve stem whereby the relative axial orientation of the plug members is variable to vary the holding force on said packing means, and

(e) means associated with said two-member valve plug operative upon said lower and upper plug members and said packing means whereby the packing means is maintained in a snug fit between the lower and upper plug members for all axial positions of said valve stem,

(f) said valve stem being in a direct, force-transmitting relation with said upper plug member and said upper plug member only when said valve and valve stem are in fully closed positions for all axial positions of the valve stem after the valve is in said fully closed position whereby the force produced by the valve stem when the valve and stem are in said fully closed positions will be transmitted solely and directly through said upper plug member to urge the two plug members together with a force propor-

tional to the closing force applied by said stem thereby increasing the holding force on the packing means in proportion to the closing force applied by said stem for all axial positions of the valve stem after the valve is in said fully closed position to form a leak-tight seal around the valve plug and through the packing means to the lower plug member to provide a tight valve shut-off.

4,274,434

AUTOMATIC LOW-FRICTION CHECK VALVE

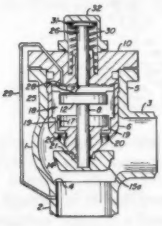
Carl-Heinz Häfele, Bergstrasse 83, 4050 Mönchen-Gladbach 1, Fed. Rep. of Germany

Division of Ser. No. 969,527, Dec. 14, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 156,954

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757352

Int. Cl.³ F16K *15/06*

U.S. Cl. 137—498 **11 Claims**



1. An automatic check valve including a valve body having an annular valve seat interposed between inlet and outlet ports, a valve element including a truncated cone portion adapted to move through an opening formed in the valve body by said valve seat and shaped to gradually reduce the cross-sectional area of the space between the valve seat and the valve element as the valve element moves toward the seat whereby the movement of the valve element will be damped as it approaches the valve seat, an annular sealing surface on said valve element surrounding the large diameter end of said truncated cone portion and engageable with said valve seat, and a damping piston connected to the valve element and adapted to enter a cylinder containing a fluid which is displaced through an orifice as the damping piston and valve approach the valve seat, said damping piston entering said cylinder only during the final phase of movement of the valve element toward the valve seat.

4,274,435

EXCESS PRESSURE VALVE PARTICULARLY FOR A FLUID PRESSURE OPERATED TELESCOPIC SUPPORTING ELEMENT EMPLOYED IN UNDERGROUND MINING

Siegmar Block, Essen, Fed. Rep. of Germany, assignor to Thyssen Industrie AG, Fed. Rep. of Germany

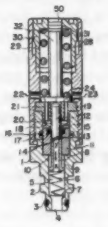
Filed Jun. 19, 1979, Ser. No. 50,104

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2832964

Int. Cl.³ F16K *31/122*

U.S. Cl. 137—508 **5 Claims**

1. An excess pressure valve particularly for mine props having telescopic parts which are extensible and retractable by fluid under pressure, comprising a valve housing have a bore extending therethrough from a connection end connectable to a source of fluid under pressure to an opposite open end, a tubular sleeve in said bore having a passageway extending therethrough for a passage of the fluid under pressure, said tubular sleeve having an annular inlet end face with an outwardly extending flange facing the connection end and an opposite annular pressure end face, a piston in said bore between said tubular sleeve and the open end, said piston having an inlet end face opposing said pressure end face of said tubular sleeve and an opposite piston pressure end face, spring means biasing said piston in a direction toward said sleeve, an additional pressure spring continuously biasing said sleeve toward said piston over a predetermined range of movement and the fluid under pressure maintaining a space between said piston and said tubular sleeve, seal means defined in said bore and isolating the space between said piston and said tubular sleeve from said opposite open end over a predetermined range of movement of said piston and said tubular sleeve, a discharge relieving bore located intermediate the length of said housing and connected to said bore through the space between said piston and said tubular sleeve when said tubular sleeve is positioned downstream of said seal means to relieve the fluid under pressure therebetween, said piston being operative to move further downstream from said seal means responsive to a further increase in pressure of the fluid under pressure, and a pressure fluid discharge passage uncoverable by said further movement of said piston further downstream from said seal means communicating with said space between said piston and said sleeve to permit the discharge of additional fluid from the bore, and said housing including a shoulder defined therein against which the flange abuts when said sleeve moves to a position at which the said pressure fluid discharge passage is uncovered by said piston, so that further subsequent movement of said piston separates said piston inlet end face from said sleeve pressure end face.



4,274,436

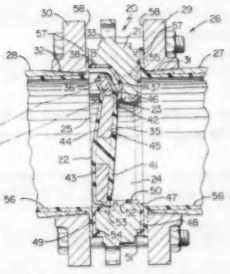
WAFER-TYPE SWING CHECK VALVE CONSTRUCTION

Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Aug. 16, 1979, Ser. No. 67,056

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—515.7 **13 Claims**



1. In a wafer-type swing check valve construction having a metallic housing body provided with an inlet and an outlet interconnected together by a valve seat that is adapted to be opened and closed by the effect of a pressure differential acting across a metallic valve disc pivotally mounted to said housing

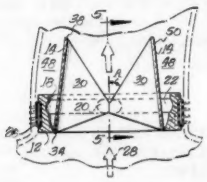
body by a pivot pin-like part of said disc that has opposed ends thereof rotatably received in cooperating recess means in said housing body to provide a pivot arrangement for said valve disc, said valve disc cooperating with said valve seat to define a seating area therewith, the improvement comprising resilient corrosion resistant plastic material completely covering said valve disc and said pivot pin-like part thereof and all of the wettable areas of said housing body so that said housing body and said valve disc and said pivot pin-like part thereof are completely protected from corrosive fluids and the like that might be passed through said valve construction, said plastic material also providing for corrosion free pivoting action of said pivot pin-like part in said recess means as said valve disc is moved by said pressure differential relative to said valve seat and permitting said valve disc to form a tight seal with said valve seat when said pressure differential closes said valve disc against said valve seat, said housing body initially having opening means passing therethrough and said plastic material filling said opening means to close the same and integrally join together parts of said plastic material disposed on opposite sides of said housing body, said opening means connecting with said portions of said housing body that define the parts of said recess means that contact said plastic material on said pivot pin-like part of said valve disc.

4,274,437

HEART VALVE

Len S. Watts, 510 Hastings Dr., Benicia, Calif. 94510

Filed Feb. 28, 1980, Ser. No. 125,481
Int. Cl.³ F16K *15/03;* A61F *1/22*
U.S. Cl. 137—527 **10 Claims**



1. A valve comprising

an annular valve body having an interior surface which defines a central passageway therethrough for the flow of liquid in a predetermined direction generally along the axis of said passageway,

said annular body having a groove in its interior passageway-defining surface which extends 360° therearound, and

a pair of valve members proportioned to fit together and block flow through said passageway when in the closed position,

said valve members each including two oppositely extending rounded pivots proportioned to be pivotally received in said groove,

said valve members each having an outward facing convex surface,

the upstream end of each of said valve members having a substantially semi-circular outward edge that seals against said interior surface of said valve body,

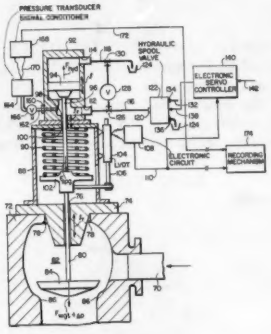
whereby said valve members pivot between their open and closed positions as a result of fluid pressures developed at opposite ends thereof and as a result of said pivotal movement gradually orbit with respect to the axis of said valve body passageway.

4,274,438

METHOD OF DIAGNOSTIC VALVE TESTING

Bernard L. La Coste, Wilmington, Del., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1979, Ser. No. 13,701
Int. Cl.³ F16K *37/00;* G01D *9/28*
U.S. Cl. 137—551 **3 Claims**



1. A method of testing a hydraulically operated steam turbine admission valve assembly which includes a support structure having a valve cavity disposed therein, said cavity adapted to have steam flow therethrough from an input port to an output port thereof; a movable mechanism having a portion thereof adjustedly oriented in said valve cavity to regulate the flow of steam therethrough; a hydraulic actuator linked to said movable mechanism and actuated by hydraulic fluid pressure to adjust the orientation of said movable mechanism, said support structure additionally including a plurality of guide clearances having a frictional force associated therewith for impeding the movement of said movable mechanism, said method comprising the steps of:

regulating the hydraulic fluid pressure of said hydraulic actuator to encourage adjustment of the orientation of the portion of said movable mechanism in one direction about a quiescent valve stroke position orientation;

regulating the hydraulic fluid pressure of said hydraulic actuator to encourage adjustment of the orientation of the portion of said movable mechanism in another direction about said quiescent valve stroke position orientation;

measuring the values of the hydraulic fluid pressure of said hydraulic actuator during the regulation thereof;

measuring the orientation of the movable mechanism to detect movement of the portion thereof in the one and the other directions about the quiescent orientation;

identifying a first measured value of hydraulic fluid pressure which occurs substantially at a time of detected initial movement of the movable mechanism in the one direction about the quiescent valve stroke position orientation, and a second measured value of hydraulic fluid pressure which occurs during detected movement of the movable mechanism in the one direction;

identifying a third measured value of hydraulic fluid pressure which occurs substantially at a time of detected initial movement of the movable mechanism in the other direction about the quiescent valve stroke position orientation, and a fourth measured value of hydraulic fluid pressure which occurs during detected movement of the movable mechanism in the other direction;

deriving a mean value from the identified measured values of hydraulic fluid pressure;

establishing values representative of break away and moving frictional forces, which impede movement of the movable mechanism in the one direction about the quiescent valve stroke position orientation, based on said derived mean value and said identified first and second measured values of hydraulic fluid pressure; and

establishing values representative of break away and moving frictional forces, which impede movement of the movable mechanism in the other direction about the quiescent valve stroke orientation, based on said derived mean value and said identified third and fourth measured values of hydraulic fluid pressure.

4,274,439

CONTROL VALVE HAVING A DISC SHAPED THROTTLE

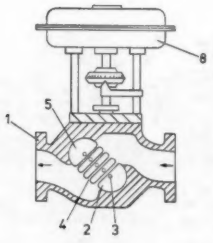
Fritz Kolb, Odenthal; Silvan Fehlisch; Otto Ziegert, both of Dormagen; Hans Bender, Mannheim, and Manfred Schmitt, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,616

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623079

Int. Cl.³ F16K *13/00, 47/02*

U.S. Cl. 137—601 **4 Claims**



1. A control valve for controlling fluid flow comprising a valve housing, a set of parallel spaced apart superposed flat discs all having their main surfaces lying in parallel planes, means mounting each disc in the housing for rotation in the same direction about an axis parallel to the plane of the disc to effect a variable clearance ranging from zero to a maximum clearance between adjacent discs which is adjustable in response to rotation of the discs in the same direction, wherein the ratio of the maximum clearance to the thickness of the disc is less than or equal to 1:5, and a roller sealing element disposed between each end of the set of discs and the housing.

4,274,440

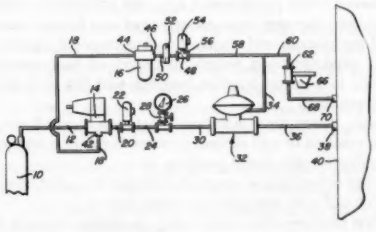
PRECISION GAS PRESSURE REGULATION

Samuel J. Richard, Jr., P. O. Box 8246, South Charleston, W. Va. 25303

Filed Dec. 29, 1978, Ser. No. 368

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—613 **4 Claims**



1. A gas pressure regulation system for maintaining a predetermined pressure of gas in a vessel comprising; a supply of pressurized gas, a pressure reducing regulator positioned downstream from said gas supply, said pressure reducing regulator including a connection thereon having first and second outlets, a safety relief valve providing a redundant safety relief in the event said reducing regulator fails, said safety relief valve being downstream said first outlet, a pressure gauge downstream said safety relief valve, a first connecting line for supplying said supply of pressurized gas to said pressure reducing regulator, said safety relief valve, said pressure guage and to said pressurized vessel downstream from said pressure gauge, said gas being supplied to said vessel at a pressure higher than said predetermined pressure into a first inlet connection with said vessel, and a control means for sensing said predetermined pressure in said vessel through a second inlet connection with said vessel separate from said first inlet connection, said control means comprising a gauge regulator downstream said second outlet from said reducing regulator, a controlled leak means connected to an outlet of said gauge regulator, a safety valve downstream from said gauge regulator for providing redundant safety relief should internal relief in said gauge regulator fail, a second connecting line from said second outlet to said gauge regulator, said safety valve and from said safety valve to a pilot regulator for supplying control gas through said pilot regulator, said pilot regulator positioned downstream from said safety valve and having adjustable flow means for adjusting the flow therethrough into said second inlet connection into said vessel, whereby the pressure of control gas in said second connecting line is determined by the gas pressure balance between said controlled leak means and said pilot regulator, said control means further including a diaphragm regulator positioned between said pressure gauge and said first inlet connection for control of the rate of flow of gas in said first connecting line to said inlet connection from said reducing pressure regulator, and a gas adjusting line communicating between said second connecting line and said diaphragm regulator whereby the flow of supply gas to said first inlet connection is controlled in response to the pressure of control gas in said second connecting line.

4,274,441

CONNECTION COUPLING CONNECTABLE UNDER PRESSURE

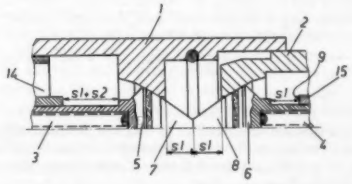
Wolf E. Fischer, Ettlingen, Fed. Rep. of Germany, assignor to Semperit AG, Vienna, Austria

Filed Sep. 5, 1978, Ser. No. 939,863

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2741027

Int. Cl.³ F16L *29/00, 37/28*

U.S. Cl. 137—614.05 **14 Claims**



1. A connection coupling which can be connected under pressure for use with hydraulic lines, comprising:

a non-pressure loaded coupling half and a pressure loaded coupling half coacting with one another;

a respective valve guide substantially centrally arranged in each coupling half;

a respective spring-loaded, hydraulically loadable valve arranged to be axially displaceable within each valve guide;

each valve having a valve head;

said valve heads being pressed against one another during the coupling operation;

the non-pressure loaded valve being displaced through ap-

proximately twice the possible valve stroke of the pressure loaded valve;
spring means for loading each of said valves;
said spring means loading the non-pressure loaded valve constituting a stronger spring means than the spring means loading the pressure loaded valve;
stop means provided for the pressure loaded coupling half;
said stronger spring means being effective such that during pressure equalization the previously pressure loaded valve is pressed in an open position against said stop means provided in the previously pressure loaded coupling half, thereby forming a maximum valve-passage cross-section at the region of both valves;
each coupling half having a passage cross-section about the valve guide of the related coupling half; and
the free passage cross-section about the valve guide at least of the non-pressure loaded coupling half being clearly greater than the free passage cross-section of the valve-passage cross-section.

4,274,442

MIXER VALVE FOR SANITARY ENGINEERING

Georg Bernat, Menden; Karl-Heinz Nolting, Hemer, both of Fed. Rep. of Germany, and Claus John, Sonderborg, Denmark, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

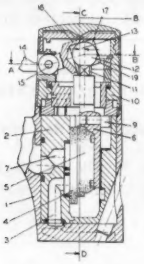
PCT No. PCT/DE78/00020, § 371 Date May 4, 1979, § 102(e) Date May 4, 1979, PCT Pub. No. WO79/00134, PCT Pub. Date Mar. 22, 1979

This PCT application filed May 4, 1979, Ser. No. 63,563

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740205

Int. Cl.³ F16K *11/06*

U.S. Cl. 137—625.17 **4 Claims**



1. A single-handle mixing valve for mixing hot and cold water sources and providing an output thereof, comprising:
a housing having a longitudinal axis, first and second inlet bores communicating respectively with said hot and cold water sources, a discharge passage, and a valve receiving chamber;
a handle means;
a first valve plate fixably mounted within said chamber and having a first surface parallel to said longitudinal axis and having first, second and third passages respectively communicating with said first inlet bore, said second inlet bore and said discharge passage;
a valve support means having a first portion extending into said chamber and a second portion coupled to said handle means;
a second valve plate carried by said support means first portion and having a second surface parallel to said longitudinal axis and adapted to slidably engage said first surface, said second surface having a mixing recess;
said valve support means second portion comprises a head-piece having a central axis spaced apart a predetermined distance from said longitudinal axis;
said handle means comprising a jacket portion rotatable around said longitudinal axis and a lever pivotally mounted on said jacket portion and pivotally connected to said head piece;
slidable pivot means for translating a rotational displacement of said jacket portion in a first direction to a pivotal displacement of said valve plate and for translating axial displacement of said lever in a second direction to a displacement of said valve plate parallel to said longitudinal axis, said central axis of said head-piece being disposed between said longitudinal axis and said slidable pivotal means, wherein displacement of said lever in said first direction varies the mixture of said hot and cold water in nonlinear relationship and wherein displacement of said lever in said second direction varies the volume of said mixture through said discharge passage.

4,274,443

DIRECTIONAL CONTROL VALVE

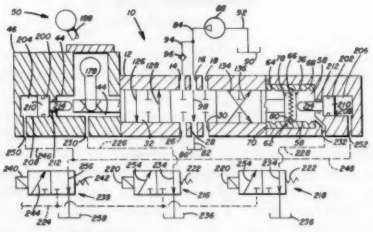
James E. Faix, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 879,906, Feb. 21, 1978, Pat. No. 4,185,660.

This application Aug. 20, 1979, Ser. No. 67,614

Int. Cl.³ F15B *13/043*

U.S. Cl. 137—625.64 **3 Claims**



1. In a directional control valve having a valve housing with a chamber therein,
inlet port means in said housing and opening into said chamber for supplying fluid from a source to said chamber,
a plurality of outlet ports in said housing and opening into said chamber,
a valve member slidably positioned in said valve chamber,
said valve member being operable to place said inlet port means and said outlet ports in fluid communication in a preselected arrangement with each other,
the improvement comprising,
pilot valve control means for moving said valve member in said chamber in a first direction to a first end position to place in a first arrangement said inlet port means in fluid communication with said outlet ports and in a second direction to a second end position to place in a second arrangement said inlet port means in fluid communication with said outlet ports,
centering means having a predetermined length of travel between a first position and a second position for shifting said valve member from either one of said first and second end positions in said chamber a distance corresponding to said predetermined length of travel of said centering means to a center position between said first and second end positions,
actuating means for moving said centering means from said first position to said second position to position said valve member in said center position,
said pilot valve control means including a first pilot operated valve and a second pilot operated valve,
said first pilot operated valve being operable to convey fluid to one end of said valve member for shifting said valve member to said first end position to convey fluid in a first direction from the valve housing,
said second pilot operated valve being operable to convey fluid to the opposite end of said valve member for shifting

said valve member to said second end position to convey fluid in a second direction from the valve housing, and

said actuating means including a third pilot operated valve for conveying fluid under pressure to said centering means for moving said centering means to said second position to shift said valve member to said center position to convey fluid in a third direction from the valve housing.

4,274,444

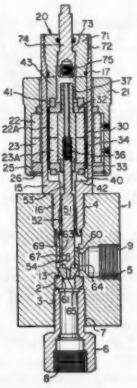
MAGNETICALLY ACTUATED RISING STEM VALVE

Robert F. Ruyak, Erie, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed May 17, 1979, Ser. No. 39,899

Int. Cl.³ F16K *31/10*

U.S. Cl. 137—630.14 **4 Claims**



1. A valve comprising a pressurizable valve body defining an annular valve seat, an inlet fluid passage in communication with one side of the valve seat and an outlet passage in communication with the other side of the valve seat and a valve actuator passage extending away from the valve seat,

a nonmagnetic tubular pressurizable bonnet having an extending axis passing through the space circumscribed by the annular valve seat and in direct fluid communication with the passages in said valve body,

a cylindrical holder coaxial with and surrounding said tubular bonnet, said holder mounted rotatable thereto, said holder carrying rare earth cobalt magnets defining an even number of north and south poles,

a driven magnet assembly carrying rare earth cobalt magnets defining an even number of north and south poles rotatably supported in the bonnet by thrust bearings to resist axial movement of the driven magnet assembly,

a valve stem journaled for free axial movement in the valve actuator passage threadably engaging the driven magnet assembly,

a valve closure element fixed to said valve stem which when engaged in said valve seat prevents flow between the inlet and outlet fluid passages, means for keying the valve stem to prevent rotation thereof,

whereby rotation of said drive magnet assembly in one direction raises the valve stem and rotation of said driven magnet assembly in the other direction lowers said valve stem.

4,274,445

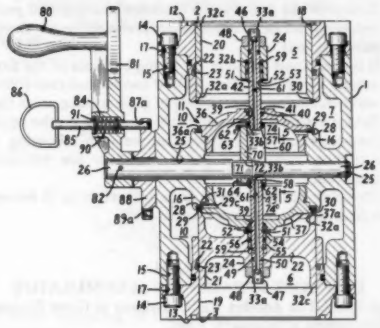
PRESSURE BALANCED THREE-WAY TRANSFER VALVE

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Apr. 10, 1979, Ser. No. 28,752

Int. Cl.³ F16K *11/18, 35/02, 31/44;* B01D *33/00*

U.S. Cl. 137—636.1 **8 Claims**



1. A pressure-balanced three-way transfer valve for controlling fluid flow into one of two fluid lines, comprising, in combination:

(1) a housing;

(2) a valve chamber in the housing;

(3) first, second and third fluid flow ports in the housing;

(4) first, second and third fluid flow passages in the housing, intercommunicating the valve chamber with the first, second and third fluid flow ports;

(5) a first valve member in the valve chamber movable between open and closed positions across the first fluid flow passage, and controlling flow through the first fluid flow port;

(6) a second valve member in the valve chamber movable between open and closed positions across the second fluid flow passage, and controlling flow through the second fluid flow port;

(7) first cam-following valve-actuating means in the valve chamber operatively connected to the first valve member;

(8) second cam-following valve-actuating means in the valve chamber operatively connected to the second valve member;

(9) a cam in the housing separated from the valve chamber and exposed to a pressure lower than fluid pressure; movable between first and second positions and operatively connected with the first and second cam-following valve-actuating means in a manner such that

(a) with the cam in the first position, the first valve member is open and the second valve member is closed;

(b) with the cam in the second position, the second valve member is open and the first valve member is closed; and

(c) with the cam in intermediate positions, both the first and second valve members are open at least partially;

(10) means for moving the cam between the first and second positions, thereby opening and closing the valves;

(11) a first pressure-equalizing chamber defined by the first cam-following valve-actuating means and the first valve member;

(12) a second pressure-equalizing chamber defined by the second cam-following valve-actuating means and the second valve member;

(13) a first fluid passage through the first cam-following valve-actuating means intercommunicating the pressure lower than fluid pressure with the first pressure-equalizing chamber;

(14) a second fluid passage through the second cam-following valve-actuating means intercommunicating the pres-

sure lower than fluid pressure with the second pressure-equalizing chamber;

(15) the first and second valve members each having pressure-receiving surfaces exposed to fluid pressure in the valve chamber and opposed pressure-receiving surfaces exposed to a pressure lower than fluid pressure in the pressure-equalizing chamber;

(16) the first and second cam-following valve-actuating means each having pressure-receiving surfaces exposed to fluid pressure in the valve chamber and opposed pressure-receiving surfaces exposed to pressure lower than fluid pressure; and

(17) the opposed pressure-receiving surfaces of the first and second valve members and first and second cam-following valve-actuating means being of such surface areas that the fluid pressure and lower pressure acting on the opposing pressure-receiving surfaces of the cam-following valve actuating means and valve members are substantially balanced;

whereby such fluid pressures do not interfere with movement of the first and second valve members.

4,274,446

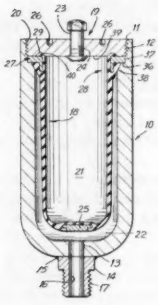
LOW COST REPAIRABLE ACCUMULATOR

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.

Filed Oct. 24, 1979, Ser. No. 87,656

Int. Cl.³ F16L *55/04*

U.S. Cl. 138—30 **4 Claims**



1. A pressure vessel having an oil charging port at one end and an open mouth portion at the other end, a retainer thread surrounding said open mouth portion, an annular stop shoulder formed on the interior of said vessel in proximate spaced relation to said open mouth portion, an annular bevel area of lesser diameter than said shoulder formed on an interior wall of said vessel, said bevel area forming a downward continuation of said shoulder and tapering inwardly toward the axis of said vessel, a bladder assembly comprised of resilient elastomeric material disposed within said vessel, said assembly including a thickened rim portion, an annular metallic retainer ring member bonded to said thickened rim portion, said retainer ring including a flange projecting radially beyond said rim portion and a depending cylindrical stem, the peripheral portion of said rim between said flange and said stem being inclined toward the axis of said vessel at an angle substantially matching the angle of said bevel portion, said thickened rim portion, in the unstressed condition thereof, including an annular band projecting radially outwardly therefrom at a position intermediate said inclined peripheral portion, a cap assembly mounted in said mouth portion and including a thread section engaging said retainer thread and a depending shoulder, said cap assembly being complementally threaded into said retainer thread and clamping said retainer ring against said stop shoulder, said annular band of said rim portion, in said clamped position of said cap assembly, being deformed into conforming relation with said bevel area, the elastomeric material of said thickened rim, in the area bounded by said bevel portion, said flange and said stem of said retainer ring, being of greater density in said clamped than in said unstressed condition.

4,274,447

BEARING MOUNT FOR A WARP BEAM

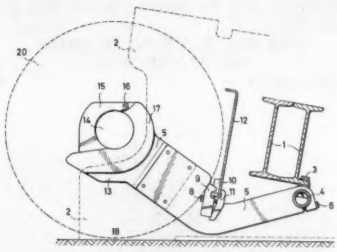
Eberhard Seifert, Rickenbach-Sulz, and Philippe John, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 29, 1980, Ser. No. 116,614

Claims priority, application Switzerland, Feb. 19, 1979, 1615/79

Int. Cl.³ D03D *49/02*

U.S. Cl. 139—97 **7 Claims**



1. In a weaving machine having a frame and a main beam extending transversely of said frame;

a bearing mounting for a warp beam, said bearing mounting including

a holder secured to and extending along said main beam;

a support arm adjustably mounted on said holder for movement in a vertical plane and along said main beam, said support arm extending from said holder transversely of said main beam;

a bearing at a free end of said support arm for journalling a warp beam therein;

a second beam extending transversely of said frame between said main beam and said bearing; and

means for adjustably clamping said support arm to said second beam.

4,274,448

DRYER FELT WITH ENCAPSULATED, BULKY CENTER YARNS

William T. Westhead, Waycross, Ga., assignor to Scapa Dryers, Inc., Waycross, Ga.

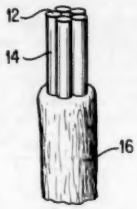
Filed Aug. 9, 1978, Ser. No. 932,360

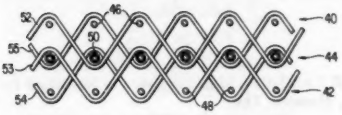
Int. Cl.³ D03D *15/00*

U.S. Cl. 139—383 A **18 Claims**

1. A dryer felt comprising: a plurality of machine direction and cross machine direction yarns interwoven in a binding relationship to provide a multiple-plane fabric having at least a base plane, a top plane and an intermediate plane positioned between said base plane and said top plane, said base plane being defined by a first plurality of said cross machine direction yarns, said top plane being defined by a second plurality of said cross machine direction yarns, and said intermediate plane being defined by a third plurality of said cross machine direction yarns, wherein a plurality of the yarns of said third plurality are encapsulated yarns so as to provide a soft, bulky intermediate plane, each of said encapsulated yarns comprising a plurality of filaments treated with a heat resistant resin so that said filaments together act as a monofilament core, and an encapsulating sheath surrounding the full length of said core, said sheath defining a soft, bulky outer surface which, when

woven into said fabric, acts to prevent shifting of said encapsulated yarns in said fabric, wherein said encapsulated yarns





reduce fabric permeability while contributing to fabric stability.

4,274,449

BAND GUIDE FOR SHUTTLELESS LOOMS

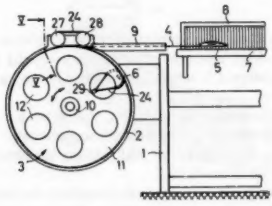
Erhard Freisler, Bubikon; Friedrich Lutz, Dürnten, and Hans Zollinger, Tann-Rüti, all of Switzerland, assignors to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed May 29, 1979, Ser. No. 43,328

Claims priority, application Switzerland, May 31, 1978, 5951/78; Apr. 9, 1979, 3359/79

Int. Cl.³ D03D *47/12*

U.S. Cl. 139—449 **14 Claims**



1. An apparatus for the insertion of the filling thread on a shuttleless loom having a band wheel driven in alternating directions or rotation, a flexible insertion band which bears an insertion member and is imparted, while being wound and unwound on the circumference of the band wheel, an oscillating movement transverse to the warp threads, and having a guide member to prevent the lifting of the insertion band from the circumference of the band wheel, characterized by the fact that the guide member is formed of a cable which is movable in oscillating fashion synchronously with the insertion band and rests from the outside against the insertion band under an initial stress.

4,274,450

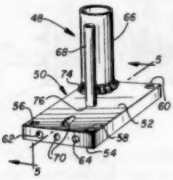
UNIVERSAL CLIP AND STRUCTURE FOR MAKING SAME

Gail W. Doerge, Kilgore, Tex., assignor to Michael Andrew Sproles; Dennis Gary Decker; Rex Houston, all of Henderson and Larry Wayne Castleberry, Longview, all of, Tex., part interest to each

Division of Ser. No. 895,246, Apr. 10, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 63,975

Int. Cl.³ B21F *45/16, 45/22*

U.S. Cl. 140—82 **4 Claims**



1. A kit for mounting on a work table for making a universal clip comprising:

a substantially rectangular base having at least one horizontal top surface and at least one vertical side surface, said base having mounting apertures disposed in said horizontal top surface and extending through said base;

structure engaging the mounting apertures to mount said base on the work table;

a metallic wire of a predetermined diameter having sufficient plastic and elastic material characteristics to function as a loop spring and be plastically deformed by bending, said wire for being bent and shaped to form the universal clip;

a metal cylinder extending upwardly in a vertical direction from the horizontal top surface of said base and being dimensioned to form a loop spring portion in said wire by wrapping said wire once around said cylinder;

a substantially vertical bore of a first bore depth in the horizontal top surface and extending partially through said base at a first predetermined distance from said cylinder;

a metallic pin disposed in said bore and extending upwardly from the horizontal top surface of said base at the first predetermined distance from said cylinder such that said wire when wrapped around said cylinder may be forced against said pin to place a first pair of crooks in said wire to form two arms extending from the loop spring portion in the wire, the position of the first pair of crooks being determined by the first predetermined distance between said cylinder and said pin;

a second bore of a second bore depth extending in a substantially horizontal direction through the vertical side surface of said base, said second bore being dimensioned to receive the ends of the wire to form a second pair of crooks to extend each end of the wire outwardly such that the end of each of the two arms extends away from the other arm, the position of said second pair of crooks being determined by the second bore depth of said second bore;

a third bore of a third predetermined depth extending in a substantially horizontal direction through the vertical side surface of said base, said third bore being dimensioned to receive the ends of the wire to form a third pair of crooks to extend each end of the wire inwardly such that the ends of each of the two arms extends towards the other arm, the position of said third pair of crooks being determined by the depth of said second bore; and

a fourth bore extending at an oblique angle through the horizontal top surface and the vertical side surface of the base, said bore being dimensioned to receive said wire for shaping and bending said wire at any point along the wire to form said clip.

4,274,451

MOLDING DEVICE FOR THE STATOR COIL WINDING HEADS OF ELECTRIC MACHINES

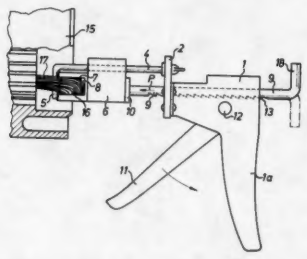
Franz Veser, Kanalstr. 16, D-7980 Ravensburg, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,549

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 7834310[U]

Int. Cl.³ B21F *1/00*

U.S. Cl. 140—106 **4 Claims**



1. Molding device for flattening a coil winding head of a stator coil comprising

a handle having a housing including a pistol grip and a control lever;

a push rod extending through said housing, one end of said push rod formed as an angle and the other end of said push rod extending longitudinally therefrom;

a forming die mounted at the other end of said push rod, said forming die having a hollow portion adapted to surround the coil winding head, and said forming die including a convex portion adapted to abut the surface of the coil winding head within said hollow portion;

mounting means located on said housing;

a plurality of hook rods extending from said mounting means toward the other end of said push rod, each of said hook rods having draw hooks formed at their remote ends, the length of said hook rods being such that each draw hook abuts the surface of the coil winding head juxtaposed from said convex portion abutment; and

a thrust mechanism provided within said handle whereby actuation of said pistol grip thrusts said push rod and said mounting die so as to flatten the coil wnding head against a holding force provided by the abutment of said draw hooks.

4,274,452

DIAPHRAGM VALVES AND VALVE SYSTEMS

Friedrich W. Schmitt, Gau-Algesheim, Fed. Rep. of Germany, assignor to Robert J. Albert, Salem, N.H.

Continuation-in-part of Ser. No. 923,062, Jul. 10, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 972,904

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821801

Int. Cl.³ B65B *3/04*; F16K *11/10, 31/365*

U.S. Cl. 141—1 **38 Claims**

1. A valve comprising a housing,

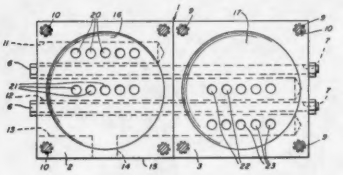
said housing defining three discrete channel means for carrying fluids,

a flexible valve actuator lying on one side of said channel means and defining with said housing a first valve chamber on one side of said actuator,

port means for permitting access of two of said channel means to said first valve chamber with one channel means having no connection with said first valve chamber,

said housing further defining with said valve actuator a second valve chamber lying on a second side of said actuator,

control hole means for permitting fluid pressure control of said actuator to establish a first position of said actuator blocking said access by said port means and a second



position of said actuator whereby said first valve chamber is interconnected with said at least two channel means.

4,274,453

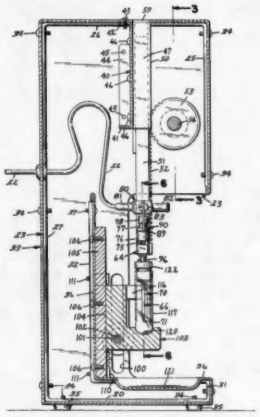
ASEPTIC FLUID TRANSFER

Peter F. Lee, Edina, Minn., assignor to Southland Instruments, Inc., Houston, Tex.

Filed Feb. 21, 1979, Ser. No. 13,078

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—1 **12 Claims**



12. The method of obtaining a blood specimen for an automatic hemotology analyzer which comprises the steps of connecting the analyzer to a tubular member having a closed cross bore;

positioning a container of blood, sealed by a resilient penetrable closure, with the closure uppermost;

penetrating the closure by said tubular member;

unclosing the cross bore;

and aspirating blood from said container through said cross bore and tubular member while admitting replacement air to said container through the penetration.

4,274,454

METHOD AND APPARATUS FOR SEALING CONTAINERS

John P. Cook, Chattanooga, Tenn., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 26, 1979, Ser. No. 14,860

Int. Cl.³ B65B *5/00*

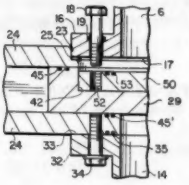
U.S. Cl. 141—1 **10 Claims**

1. An apparatus for sealing two containers, comprising:

(a) first and second co-axial containers each having planar sealing surfaces that face each other;

(b) a slideable, carrier closure member in the form of a plate;

(c) carrier closure guide means housing the carrier closure member and positioned between the sealing surfaces of the first and second containers, said guide means being adapted for permitting the carrier closure member to slide between a closed position and an open position, in said closed position the carrier closure member blocks the openings of the first and second containers and in said open position the carrier closure member is displaced from the openings of the first and second containers so that said containers are in communication;



(d) a closure member retained in a recess in the face of the carrier closure member;

(e) means for disengagably connecting said closure member with said second container; and

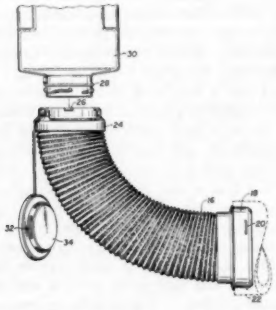
(f) sealing means carried on the closure member for establishing a seal between the closure member and the second container when the closure member is engaged with said second container by said connecting means.

4,274,455

TONER LOADING DEVICE

Peter B. Simons, Los Altos, Calif., assignor to TBS, Inc., Mountain View, Calif.

Filed Apr. 13, 1979, Ser. No. 29,687
Int. Cl.³ B65B *1/04;* B67C *9/00*
U.S. Cl. 141—1 **6 Claims**



1. A method of loading toner from a canister into a machine of the type having a toner hopper, the method comprising the steps of:

removably connecting one end of an expandable hose to the machine to empty into the hopper,

removably connecting the other end of the hose to the toner canister;

stretching the hose from the machine while simultaneously emptying the canister into the hose,

detaching the canister from the hose,

closing off the hose end which has been detached from the canister, and

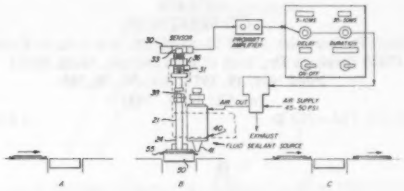
compressing the hose in the direction of its length while simultaneously emptying the bulk of the toner within the hose into the hopper.

4,274,456

APPARATUS FOR DISPENSING FLUID SEALANT

Stanley S. Huffman, Golden, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Dec. 6, 1979, Ser. No. 100,847
Int. Cl.³ B65B *43/42*
U.S. Cl. 141—157 **8 Claims**



1. An apparatus for repeatably dispensing predetermined amounts of fluid sealant accurately into an annular recess of separately presented can end articles comprising:

a dispenser arm pivotally mounted at one end thereof for horizontal and vertical arcuate movement;

releasable clamping means located centrally of said dispenser arm for accurately positioning said dispenser arm in a horizontal plane;

can end engaging means, including;

a rotatable vertically reciprocating member located at the end of said dispenser arm opposite the pivot mounting end, for engaging a rotating upwardly moving can end;

electronic sensing means responsive to the vertical movement of said rotatable vertically reciprocating member to sense when the can end is vertically proximate to said dispenser arm; and

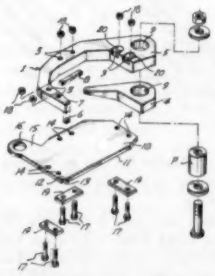
dispensing means mounted on the dispensing arm proximate said can end engaging means and including a discharge nozzle aligned with the annular groove of a can end when said can end is engaged by said can end engaging means and said can end in its reciprocal vertical movement is proximate to said discharge nozzle, said dispensing means including means responsive to said electronic sensing means to discharge fluid sealant from said discharge nozzle into the annular groove of the can end when the can end is rotating and proximate the discharge nozzle of said dispensing means.

4,274,457

TREE SHEAR BLADE STRUCTURE

Christopher Nilsen, 1101 W. Birch St., Shelton, Wash. 98584

Filed Dec. 13, 1979, Ser. No. 103,397
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 E **17 Claims**



1. In blade structure for a tree shear including a shear blade

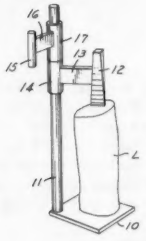
having a cutting edge, a blade carrier for carrying and reinforcing the blade, means for detachably mounting the blade on the blade carrier and power drive means for moving the blade to shear a tree, the improvement comprising means for connecting the blade directly to the power drive means independently of the blade carrier.

4,274,458

LOG SPLITTERS

Gilbert R. Dueweke, 17435 Stephens Dr., and John J. Krobock, 17425 Stephens Dr., both of East Detroit, Mich. 48021

Filed Nov. 19, 1979, Ser. No. 95,255
Int. Cl.[3] B27L *7/00*
U.S. Cl. 144—193 D **3 Claims**



1. A log splitter comprising

a wedge,

means for supporting said wedge in overlying position with respect to a log to be split and for guiding said wedge toward said log when the wedge is struck by a hammer,

an auxiliary driver,

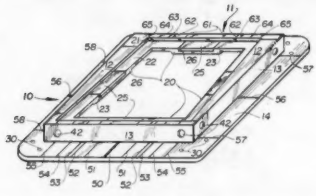
means for supporting said driver for movement into and out of alignment with said wedge and for movement with said wedge such that when a log is initially split by the wedge and becomes jammed in the log or is driven into the log so that the hammer cannot reach it, the auxiliary driver may be brought into alignment with the wedge and the hammer will then strike the auxiliary driver and drive the wedge through the log.

4,274,459

TEMPLATE HOLDER AND TEMPLATES

John E. Galajda, 1161 Elaine Rd., Columbus, Ohio 43227

Filed Sep. 21, 1979, Ser. No. 77,615
Int. Cl.[3] B27Q *35/04*; B27C *5/10*
U.S. Cl. 144—144.5 R **24 Claims**



1. A template apparatus for use in guiding of a work tool along a predetermined path with respect to a workpiece, said apparatus comprising

a set of templates including a plurality of individual templates of thin sheet form with each template having a respective character cutout through which the work tool is projected and guided in duplicating of the character on the workpiece, the characters in said set of templates having configurations such that there are at least two different lateral space requirements for respective ones of the characters in the forming thereof in side by side relationship along the predetermined path, and

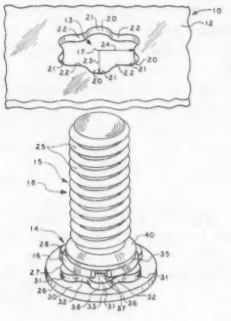
a template holder having a structural frame including a template supporting surface for support of a template thereon in predetermined relationship and a base portion positionable on a surface of a workpiece with said template supporting surface being in relatively spaced relationship to the workpiece surface, said template holder having spacing reference indicia provided for the different lateral spacings of respective template characters with said reference indicia providing orientation of the holder with respect to a preceding formed character and position referencing for a succeeding character to be formed.

4,274,460

PANEL FASTENER JOINT

Ronald J. Egner, Birmingham, Mich., assignor to Textron, Inc., Providence, R.I.

Filed Jun. 20, 1979, Ser. No. 50,157
Int. Cl.[3] F16B *39/00*
U.S. Cl. 411—83 **15 Claims**



1. A joint comprising: a workpiece such as a section of sheet material, or the like, having a predetermined thickness and including an aperture formed therein, said aperture having a center and being defined by a periphery having a non-constant radial dimension from said center including a minimum radial dimension and a maximum radial dimension; and a fastener assembly mountable with said workpiece comprising a fastener member having a head portion and a shank portion extending axially therefrom, said head portion including a first enlarged head section having an outer peripheral dimension which is greater than that of said aperture, a second section extending axially from said first enlarged head section towards said shank portion and having a non-constant peripheral radial dimension corresponding in shape to said aperture dimension and receivable within said aperture, a third section intermediate said second section and said shank portion which includes a circumferential groove, said groove being spaced from said first enlarged head section by a distance only slightly greater than the thickness of said workpiece and a resilient retaining ring disposed within said circumferential groove, said shank portion and said head third section being dimensioned for passing through said aperture, said retaining ring having a free form dimension such that it is loosely carried within said circumferential groove, and with a maximum outer radial dimsneion greater than the minimum radial dimension of said aperture, and said groove having a depth which permits said ring to be contracted resiliently in a radial direction within said groove such that said ring may be received through said aperture, and due to the spacing of said groove from the enlarged head section said ring, upon returning to said free form dimension after passing through said aperture, will engage the surface of said workpiece opposite that engaged by said first enlarged head section, said ring cooperating with said first enlarged

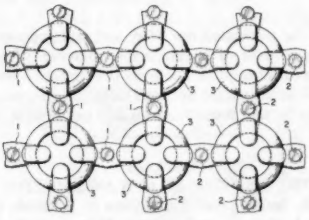
head section to retain said fastener assembly in mounted relation with respect to said apertured workpiece, thereby maintaining said head second section disposed within said aperture and the corresponding peripheral dimensions of said aperture and said head second section co-acting to prevent rotation of said fastener assembly within said aperture.

4,274,461

ASSEMBLY-TYPE TIRE PROTECTOR

Satoshi Yamamoto, Yokohama, Japan, assignor to Mitsubishi Seiko Kabushikikaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 740,966, Nov. 11, 1976, abandoned. This application Oct. 23, 1978, Ser. No. 953,618
Claims priority, application Japan, Jun. 23, 1976, 51-73293
Int. Cl.[3] B60C *27/00*
U.S. Cl. 152—167 **10 Claims**



1. An assembly-type tire protector comprising a plurality of weld free annular members disposed substantially parallel to the tire surface and a plurality of link members disposed substantially perpendicular to the tire surface, said annular members having an uninterrupted, uniform continuous surface and each of said annular members being connected together to the next adjacent annular member by said link members to form a net, said link members being uniformly distributed throughout the net, each of said link members comprising a body which is provided at both of its ends with opposing hook-like arms and bent portions for interconnecting said annular members, said opposing hook-like arms and said bent portions defining an opening, a pin disposed upright in said body, said pin having a head portion and a base portion, and the top of said pin being substantially coplanar with the bent portions of said body, said head portion substantially occupying said opening, said body of the link member containing a blind hole including a substantially flat bottom portion for receiving said base portion of the pin, and expanding means disposed in said hole for expanding said base portion of the pin within said hole for locking said pin in position in said hole around a portion of said expanding means, said base portion of said pin including an aperture and said means for expanding said base portion being a wedge means for expanding the aperture and said base portion to a size larger than the entrance to said blind hole.

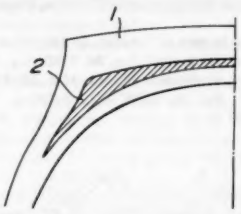
4,274,462

PNEUMATIC TIRE HAVING AN IMPROVED RESISTANCE AGAINST HEAT BUILD-UP EMPLOYING SYNDIOTACTIC-1,2-POLYBUTADIENE FIBERS IN TREAD BASE RUBBER

Masaki Ogawa, Sayama; Tamio Araki, Musashino, and Shinji Yamamoto, Ichihara, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo and Ube Industries, Ltd., Ube, both of, Japan

Filed Apr. 5, 1979, Ser. No. 27,414
Claims priority, application Japan, Apr. 6, 1978, 53-39677
Int. Cl.[3] B60C *11/00, 1/00*; C08L *7/00*
U.S. Cl. 152—209 R **4 Claims**

1. A pneumatic tire having a cap/base structured tread and having an improved resistance against heat build-up, comprising a tread base rubber formed from a vulcanizate, which has a rebound resilience value of at least 50% defined in JIS K6301, of a rubber composition comprising 3 to 40 parts by weight of preformed short fibers of syndiotactic-1,2-polybutadiene having a maximum diameter of not more than



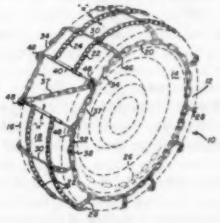
10μ and an average diameter of less than 1μ, 20 to 100 parts by weight of carbon black and 0.2 to 2 parts by weight of sulfur, on a basis of 100 parts by weight of a rubber selected from natural rubbers, synthetic rubbers and blends thereof in an optional blending ratio.

4,274,463

TIRE TRACTION ENHANCING APPARATUS

Marshall Freeman, 1305 Camino Pablo, San Jose, Calif. 95125

Filed Oct. 25, 1979, Ser. No. 88,020
Int. Cl.[3] B60C *27/00*
U.S. Cl. 152—213 R **6 Claims**



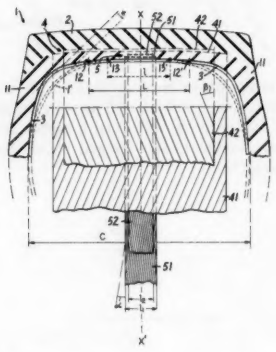
1. In a tire traction enhancing apparatus including at least two circumferential chains connected at discrete points by perpendicular chains and extending about the surface of a vehicular tire, the improvement comprising:

a bridle member attached to one end of the outermost and innermost circumferential chains with respect to the tire, the bridle member being generally "U-shaped" and having equal length arms and a bit portion, the length of said bit portion being less than the sidewall-to-sidewall width of the inflated tire, and the length of said arms being less than the tread to rim depth of the inflated tire, the attachment to the outermost and innermost circumferential chains being made at the ends of said arms, and the bridle member having loop eyes for receiving chain at the intersections of said arms and said bit portion.

4,274,464
RADIAL CARCASS TIRE, PARTICULARLY FOR EARTH-MOVING EQUIPMENT EMPLOYING CARCASS EXPANSION LIMITING BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,180, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,037
Claims priority, application France, Mar. 10, 1978, 78 07386
Int. Cl.³ B60C *9/20, 9/08*
U.S. Cl. 152—352 R **11 Claims**



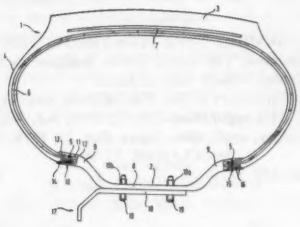
1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement having a meridian curvature less than that of the radial carcass reinforcement and which, on the one hand, is formed of at least two superimposed plies of wires or cables parallel in each ply and crossed from one ply to the other forming angles of less than 30° with the longitudinal direction of the tire and, on the other hand, is parallel to the radial carcass reinforcement along an equatorial zone, the radial carcass reinforcement having in the radially outer half a meridian profile whose minimum curvature is located between the shoulders of the tire and whose maximum curvature is located at the place of the shoulders, characterized by the fact that, in the equatorial zone where the tread reinforcement is parallel to the radial carcass reinforcement and between these two reinforcements, there is arranged a limiting block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-half of the smallest angle used in the tread reinforcement, this limiting block having a width less than the width of the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement and further characterized by the fact that the wires or cables of low extensibility of the limiting block have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

4,274,465
PNEUMATIC TIRE AND WHEEL RIM ASSEMBLY

Barrie J. Allbert; Tom French, both of Sutton Coldfield; Ian Kemp, Tamworth, and Michael R. Corner, Coventry, all of England, assignors to Dunlop Limited, London, England

Filed Sep. 13, 1979, Ser. No. 75,529
Claims priority, application United Kingdom, Sep. 27, 1978, 38454/78
Int. Cl.³ B60B *21/10, 25/02*
U.S. Cl. 152—379.5 **13 Claims**

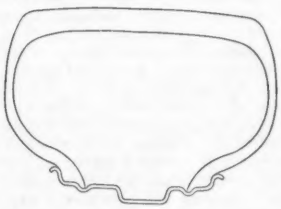
1. A pneumatic tire and wheel rim assembly comprising a tire having a tread, a pair of sidewalls and a pair of axially spaced tire beads and a wheel rim the lateral margins of which are profiled to define a pair of axially spaced circumferential grooves in each of which a respective one of said tire beads is located, each groove comprising a base portion and a pair of opposed side portions integral therewith, said side portions of each groove having projections integral therewith in engagement with the associated tire bead, and said groove side portions being formed of a deformable material allowing said groove side portions to be relatively convergent subsequent to insertion of the associated tire bead therebetween, whereby the grip exerted by said projections on said tire bead is increased.



4,274,466
TIRE AND WHEEL RIM ASSEMBLIES

Tom French, Sutton Coldfield; William E. Mitchell, Coventry; Michael J. Kenney, and Thomas Holmes, both of Sutton Coldfield, all of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 801,319, Dec. 5, 1977, Pat. No. 4,148,348. This application Nov. 20, 1978, Ser. No. 962,096
Claims priority, application United Kingdom, Jun. 4, 1976, 23099/76; Sep. 24, 1976, 39670/76; Sep. 24, 1976, 39672/76; Mar. 1, 1977, 08501/77; Mar. 4, 1977, 09161/77
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.³ B60C *7/24*
U.S. Cl. 152—381.3 **11 Claims**



10. A one piece wheel rim for a pneumatic tire of a motor vehicle, said tire having beads with extended toe portions projecting axially and radially inwardly of each said bead;

said wheel rim comprising in cross-section, a pair of radially outwardly extending flanges and an open well between said flanges of a radial depth at least as great as the radial height of said flanges so that a tire can be mounted on the rim by use of the open well;

a pair of bead seats immediately adjacent the flanges, each tapering slightly toward said well;

means to prevent axial inward movement of the beads of a tire on said bead seats, said means comprising a pair of circumferential bead toe locating grooves in the rim immediately adjacent the inside edge of each bead seat and positioned to receive said toe portion;

an intermediate rim portion between the groove and the well having a diameter approximately equal to that of the tapered bead seat at its outer edge but greater than the

diameter of the tapered bead seat at its inner edge, the edges of said grooves presenting surfaces for abutment of the extended bead toe when the tire bead is subject to a force tending to move the bead off its seat, said locating grooves being substantially "U" shaped and smoothly curved from the inside edge of the adjacent bead seat so as to form a pocket to snugly receive said extended toe portion in a manner so that the forces tending to dislodge the bead will compress the extended toe into its locating groove and against said abutment surfaces so as to prevent dislodgement of said bead from its seat.

4,274,467

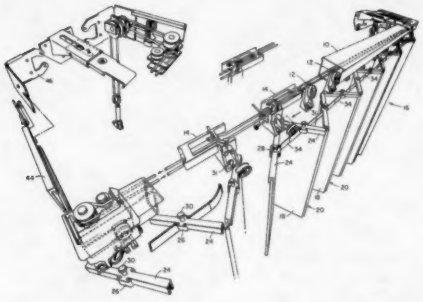
DRAPERY AND SUPPORT COMBINATION

Paul E. Comeau, Warwick, R.I., assignor to Kenney Manufacturing Company, Warwick, R.I.

Continuation-in-part of Ser. No. 23,071, Mar. 23, 1979, Pat. No. 4,254,815. This application Apr. 5, 1979, Ser. No. 27,466

Int. Cl.[3] **E06B** *3/48;* **E05D** *15/26;* **A47H** *5/00*

U.S. Cl. 160—84 R **8 Claims**



1. A drapery and support combination comprising:

(a) a horizontally disposed curtain rod mounted on a base;

(b) a curtain made up of a plurality of elongated slats arranged to form a curtain which moves between opened and closed positions in accordion fashion;

(c) slat supporting means at the upper end of each slat for suspending same in sliding and pivoting relation from said rod;

(d) means associated with said slat supporting means for holding the angle between adjacent slats, when said curtain is in the closed position, at a predetermined angle relative to the axis of said rod, independently of the means for joining the lateral edges of the slats; and

the slat supporting means having a central support member and a pair of slots therein positioned relative to the pivot axis of said slat such that tension applied to said central support member along a line parallel to and in a common vertical plane with the axis of said curtain, pivots said slat to said predetermined angle.

4,274,468

TRIPLE-SASH DOUBLE-HUNG STORM WINDOW

Shelvey C. McPhail, 4924 NW. 31st St., Oklahoma City, Okla. 73122

Filed Sep. 10, 1979, Ser. No. 73,916

Int. Cl.[3] **A47H** *1/00*

U.S. Cl. 160—90 **19 Claims**

1. A triple-sash, double-hung window assembly comprising:

a first, generally rectangular inside window sash adapted for mounting within the window opening in the wall of a house;

an inside sash upper window panel assembly mounted in the upper portion of said first, inside window sash;

an inside sash lower window panel assembly slidably mounted in the lower portion of said first, inside window sash for vertical sliding movement in said inside window sash;

a framing element extending around said inside window sash;

a facing strip secured to said framing element and spaced horizontally from, and extending around the perimeter of, said first inside window sash;

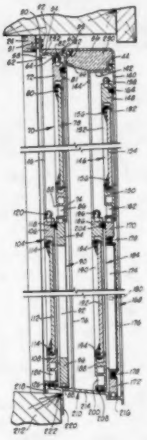
a multiple channeled, double-sash rectangular frame which includes:

a peripheral mounting flange secured to said facing strip;

a pair of vertically extending, horizontally spaced, substantially parallel side framing plates each secured to, and extending substantially normal to, said peripheral mounting flange, lying in planes extending normal to said inside window sash;

a horizontally extending top plate extending across and interconnecting the upper ends of said side framing plates;

a first series of three substantially parallel, vertically extending flanges secured to, and projecting substantially perpendicularly from, each of said side framing plates and toward the other of said side framing plates, each of said first series of three substantially parallel flanges defining a pair of contiguous intermediate sash side channels which form a portion of an intermediate win-



dow sash, the pair of intermediate sash side channels associated with one of said side framing plates being in coplanar alignment with a pair of intermediate sash side channels associated with the other of said side framing plates;

a second series of three substantially parallel flanges secured to, and projecting substantially perpendicularly from, said top plate and defining a pair of contiguous intermediate sash upper channels forming a portion of an intermediate window sash, the pair of contiguous intermediate sash upper channels associated with said top plate being in coplanar alignment with the pair of intermediate sash side channels associated with each of said side framing plates;

a third series of three substantially parallel flanges each associated with each of said side framing plates, each of said flanges in each of said third series projecting in a plane which extends substantially normal to each of said side framing plates, and each connected to one of said side framing plates and projecting therefrom toward the other of said side framing plates, each of said third series of flanges being positioned on its respective side framing plate nearer to the other of the two side framing plates than are the flanges in said first series of flanges carried on the same side plate, each of said third series

of flanges defining a pair of contiguous outer sash side channels forming a portion of an outer window sash, the pair of contiguous outer sash side channels associated with one of said side framing plates being in coplanar alignment with the pair of outer sash side channels associated with the other of said side framing plates, said outer sash side channels being spaced horizontally from said intermediate sash side channels, and being disposed a lesser horizontal distance from each other than said intermediate sash side channels; and

at least two parallel flanges disposed in a fourth series of flanges projecting perpendicularly from said top plate and spaced horizontal from said second series of flanges on said top plate, said parallel flanges in said fourth series of flanges projecting vertically downward from said top plate by a greater distance than the flanges in said second series of flanges, and said fourth series of flanges defining at least one outer sash upper channel, said outer sash upper channel being in coplanar alignment with one of the outer sash side channels associated with each of said side framing plates;

an intermediate sash upper window light assembly dimensioned to pass through the opening in said rectangular inside window sash when said lower window panel assembly of said inside sash is slid vertically to an open position, said intermediate sash upper window light assembly including means removably and slidably supporting said intermediate sash upper window light assembly in the upper portion of the ones of said intermediate sash side channels associated with each of said side framing plates which are spaced the farthest from said inside sash of said two contiguous intermediate sash side channels;

an intermediate sash lower window light assembly dimensioned to pass through the opening in said rectangular inside window sash when said lower window panel assembly of said inside sash is slid vertically to an open position, said intermediate sash lower window light assembly including means removably and slidably supporting said intermediate sash lower window light assembly in the lower portion of the other ones of said intermediate sash side channels associated with each of said side framing plates which are the closest of the two contiguous intermediate sash side channels to said inside sash;

an outer sash upper window light assembly dimensioned to pass through the opening in said rectangular inside window sash when said lower window panel assembly of said inside window sash is slid vertically to an open position, and further dimensioned to pass through the opening defined between said side framing plates, top plate and the first and second series of flanges carried thereon, respectively, when said intermediate sash lower window light assembly is slid vertically to an open position in substantial horizontal alignment with said intermediate sash upper window light assembly, said outer sash upper window light assembly including means supporting said outer sash upper window light assembly in the upper portion of the ones of said outer sash side channels associated with each of said side frame member plates which are spaced farthest from the inside sash and from said intermediate sash of said two contiguous outer sash side channels; and

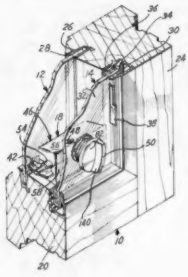
an outer sash lower window light assembly dimensioned to pass through the opening in said rectangular inside window sash when said lower window sash assembly of said inside sash is slid vertically to an open position, and further dimensioned to pass through the opening defined between said side framing plates, top plate and the first and second series of flanges carried thereon, respectively, when said intermediate sash lower window light assembly is slid vertically to a position in which it is substantially aligned with said intermediate sash upper window light assembly, said outer sash lower window light assembly including means slidably and removably supporting said outer sash lower window light assembly in the lower portion of the ones of the contiguous outer sash side channels associated with each of said side framing plates which are spaced relatively closer to said intermediate sash and inside sash than are the contiguous outer sash side channels in which said outer sash upper window light assembly is supported.

4,274,469

OPERATOR FOR A SLAT SHADE ASSEMBLY

Herman S. Kuyper, Knoxville; Robert S. Evers, and John Regal, both of Pella, all of Iowa, assignors to Rolscreen Company, Pella, Iowa

Filed Oct. 30, 1978, Ser. No. 955,709
Int. Cl.[3] E06B *3/32*
U.S. Cl. 160—107 **10 Claims**



1. A mechanism for operating a slat shade assembly of the type located between two glazing panels of a window sash construction, said mechanism comprising, in combination, a window sash frame, first and second glazing panels supported by said frame, said first glazing panel being removably mounted on said frame, a surface defined on said frame between said glazing panels, a slat shade assembly operatively carried by said frame between said glazing panels and being movable between first and second positions, a mechanism assembly having a coupling member operatively directly interconnected to a selected portion of one of said slat shades for moving said slat shade between said first and second positions, said mechanism assembly including a housing and a drive mechanism operatively mounted and completely contained within said housing, separate fastener means for securing said housing directly to a selected portion of said surface of said frame, said fastener means defining the sole means for sleectively mounting or removing said assembly to or from said frame, said drive mechanism including said coupling member, said drive mechanism including a gear train, said gear train being constructed and arranged for resisting undesired movement of said slat shade assembly following the positioning thereof, normally caused by spring action in said slat shade assembly, an opening in said first glazing panel adjacent said mechanism, a manual control member operatively mounted on said first glazing panel passing through said opening and having means for operative connection of said control member with said drive mechanism, said control member being accessible for manual operation from the exterior of the space defined between said glazing panels.

4,274,470

BOTTOM BLOCKS FOR ELECTROMAGNETIC CASTING

John C. Yarwood, Madison, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

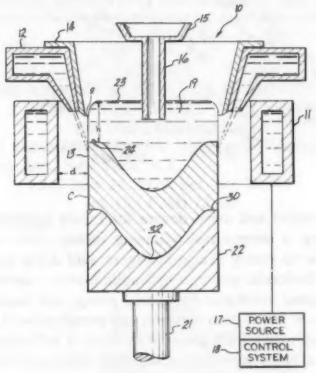
Division of Ser. No. 957,219, Nov. 2, 1978. This application Aug. 20, 1979, Ser. No. 68,313
Int. Cl.[3] B22D *27/02*
U.S. Cl. 164—49 **16 Claims**

1. In a process for casting a metal by electromagnetically containing and forming molten metal into a desired shape, said

electromagnetic containing and forming including the steps of pouring molten metal into a bottom block, providing an inductor for applying a magnetic field to said molten metal, and applying an alternating current to said inductor to generate said magnetic field, said inductor in operation being spaced from said molten metal by a gap extending from the surface of the molten metal to the opposing surface of the inductor, the improvement wherein said process further comprises:

closely matching the electrical resistivity of said bottom block to the electrical resistivity of the metal to be cast, whereby during start up advantageous containment of the initial surge of molten metal is accomplished.

12. In a process for casting a metal by electromagnetically containing and forming molten metal into a desired shape, said electromagnetic containing and forming including the steps of



pouring molten metal from a spout into a bottom block, providing an inductor for applying a magnetic field to said molten metal and applying an alternating current to said inductor to generate said magnetic field, said inductor in operation being spaced from said molten metal by a gap extending from the surface of the molten metal to the opposing surface of the inductor, the improvement wherein said process further comprises:

providing a bottom block having a continuously curved deeply hollowed out central section in the top surface thereof, said hollowed out central section having a contour which approximates the contour of the steady state solidification front of said shape,

whereby the initial surge of molten metal into the casting apparatus during start up can be restrained thereby preventing run out of the molten metal.

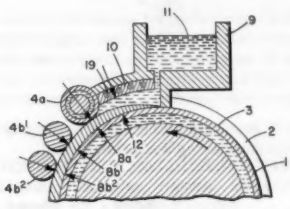
4,274,471
PROCESS FOR CONTINUOUS CASTING OF METALS AND AN APPARATUS THEREFOR

Michinori Minoura, Nagoya, and Nobuo Tsuno, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Mar. 12, 1979, Ser. No. 19,591
Claims priority, application Japan, Mar. 15, 1978, 53-28753
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—87 **11 Claims**

1. A process for continuous casting of metals which comprises forming a roll system with a main roll cooled from the inner portion and a plurality of sub-rolls, said sub-rolls being provided along the outer periphery surface of the main roll forming and holding a given gap against the main roll, supplying a molten metal into the gap formed by the main roll and the sub-rolls while rotating the main roll and the sub-rolls mutually in a direction carrying with the molten metal, covering the flow path of the molten metal from a molten metal source to a first sub-roll with a tunnel made of a heat resistant material, said tunnel preventing dissipation of heat from the molten metal surface at the tunnel side at the section between the position where the molten metal falls down to the main roll and the first sub-roll, initiating solidification of said molten metal in said tunnel, said molten metal passing through the tunnel smoothly and increasingly solidifying in one direction from the main roll surface as it passes through said tunnel, said tunnel restraining variations of the cross-sectional dimension of the molten metal, which disturbs the stable growth of the solidified shell from the main roll surface side, completing solidification of said molten metal at said sub-rolls, and taking the solidified metal continuously from said roll system.

6. An apparatus for continuous casting of metals, which comprises a roll system including a main roll having a large diameter and capable of being cooled from the inner portion and a plurality of sub-rolls, said sub-rolls being arranged along the outer periphery surface of the main roll, forming and holding a given gap against the main roll, means for driving said



roll system, means for cooling the main roll, means for supplying a molten metal to a gap formed by the main roll and the sub-rolls, and a tunnel which is made of a heat resisting material and covers the flow path of the molten metal from a molten metal source to a first sub-roll, said tunnel preventing dissipation of heat from the molten metal surface at the tunnel side at the section between the position where the molten metal falls down to the main roll and the first sub-roll, said tunnel and main roll causing initiation and increasing solidification of molten metal passing through said tunnel, said tunnel causing smooth passage of molten metal therethrough, said molten metal in the tunnel solidifying in one direction from the main roll surface, said tunnel restraining variations of the cross-sectional dimension of the molten metal, which disturbs the stable growth of the solidified shell from the main roll surface side and preventing complete solidification of said molten metal therein, said sub-rolls completing solidification of said molten metal.

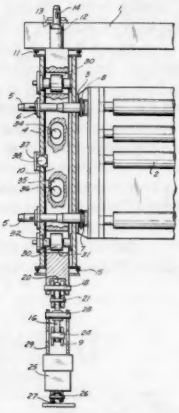
4,274,472
CONTINUOUS CASTING INSTALLATION

Joel Cazaux, Chelles, France, assignor to Fives-Cail Babcock, Paris, France

Filed Jun. 14, 1979, Ser. No. 48,438
Claims priority, application France, Jun. 26, 1978, 78 18944
Int. Cl.³ B22D *11/04*
U.S. Cl. 164—416 **9 Claims**

1. An installation for casting molten metal into a continuous strand, which comprises an oscillatory mold receiving the molten metal and discharging the continuous metal strand, a mold discharge guide rack including an assembly of guide elements for the continuous metal strand and means for supporting the guide elements, means for imparting oscillations to the mold, the oscillation imparting means including means for guiding the oscillations and a control lever operatively associated with the guiding means, and two fluidtight housings, the

housings being affixed to the supporting means at respective sides of the guide rack and enclosing only the guiding means of



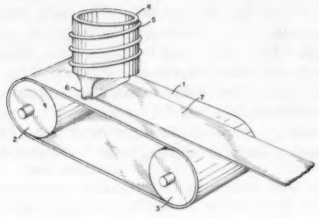
the oscillation imparting means, each housing and enclosed guiding means constituting a structural unit.

4,274,473

CONTOUR CONTROL FOR PLANAR FLOW CASTING OF METAL RIBBON

John R. Bedell, Madison; Sheldon Kavesh, Whippany; Naim S. Hemmat, Mendham; Seymour Draizen, Old Bridge, and Robert W. Smith, Long Valley, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 14, 1980, Ser. No. 111,748
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—423 **8 Claims**



1. An apparatus for planar flow casting of metal ribbon comprising a movable chill surface, a reservoir for holding molten metal and a nozzle in communication at its top with the reservoir and having at its bottom two lips adjacent to the chill surface, a first lip and a second lip numbered in the direction of movement of the chill surface, wherein

the lips are separated by and define a slot for depositing molten metal on the chill surface,

the leading and trailing edges of the slot are substantially parallel to each other and are generally perpendicular to the direction of movement of the chill surface,

the second lip has a substantially planar bottom surface,

the first lip has a bottom surface at least part of which is upstream from the leading edge of the slot and not parallel to the bottom surface of the second lip,

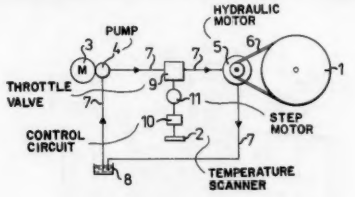
the leading edge of the first lip is separated from the chill surface by at least about 0.02 mm and is as close or closer to the chill surface than is any other point on the nozzle and no point on the bottom surface of the nozzle is more than about 1 mm from the chill surface.

4,274,474

HYDRAULIC CONTROL AND DRIVE DEVICE FOR ROTARY HEAT EXCHANGER

Lars A. Bergkvist, Gottne, 890 42, Mellansel, Sweden

Filed Jan. 23, 1979, Ser. No. 5,725
Claims priority, application Sweden, Jan. 30, 1978, 7801121
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—7 **3 Claims**



1. A control and drive device for rotary heat exchangers, comprising: a temperature scanning means; drive means for connection to rotary heat exchangers: said drive means comprising a hydraulic pump, a hydraulic motor, a second motor drive coupled mechanically to said pump, and means providing fluid communication between said pump and said hydraulic motor supplying a fluid pressure medium at sufficient pressure and rate; a valve provided in the fluid communication means between said pump and said hydraulic motor said valve preferably having an adjustment range substantially from a closed to fully open; a throttle means connected between said temperature scanning means and said valve to control the valve position whereby the rate and pressure of said pressure medium from the pump to the hydraulic motor, and therewith the rotary speed of the hydraulic motor, are determined according to a function predetermined in relation to the scanned temperature, said throttle means comprising a control circuit and a stepping motor including a rotary shaft carried camming device; said valve having an adjustment member connected to be positioned by said camming device; said stepping motor being controlled to assume a predetermined angular position responsive to a signal condition from said temperature scanner predetermined in relation to the scanned temperature.

4,274,475

CONTROL APPARATUS FOR REGULATING BUILDING PERIMETER TEMPERATURE CHANGE SYSTEM

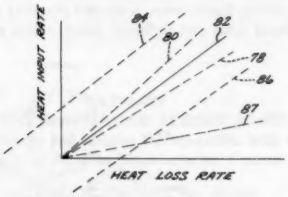
Dieter Rall, 405 Catalina Dr., Newport Beach, Calif. 92663; David R. Hornbaker, 1520 Cole Way, La Habra, Calif. 90631, and William W. Sawyer, 1202 Longwood Rd., Lake Forest, Ill. 60045

Filed Jun. 4, 1979, Ser. No. 45,279
Int. Cl.³ G01K *17/00*; G05D *23/00*
U.S. Cl. 165—12 **12 Claims**

1. Control apparatus for regulating a building temperature change system, said apparatus comprising:

a heat flow sensor adapted to be mounted in contacting, heat exchange relation to a surface of a thermally conductive building element whose exterior surface is exposed to outside weather conditions, said sensor being reactive to heat flow to or from said building element, independently of the temperature to which said sensor is subjected, to generate a sensor signal proportional to the direction and magnitude of said heat flow; and

controller means responsive to said sensor signal to operate a building temperature change system for changing the



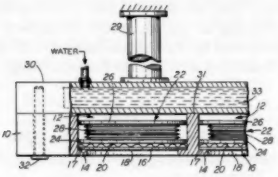
rate of heat addition to or heat extraction from the building interior in proportion to the value of said sensor signal.

4,274,476

METHOD AND APPARATUS FOR REMOVING HEAT FROM A WORKPIECE DURING PROCESSING IN A VACUUM CHAMBER

Robert W. Garrett, Reading, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 14, 1979, Ser. No. 38,741
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—80 E **6 Claims**



1. A workpiece holding apparatus for use in a manufacturing operation performed in a vacuum, comprising:

(a) a holding plate having at least one void therethrough from one surface to another surface, said void having a first portion for receiving a workpiece and having a predetermined cross-sectional area, and a second portion for retaining the workpiece and having a predetermined cross-sectional area less than said first portion cross-sectional area;

(b) an expandable heat pipe placed in said first portion of said void in good thermal contact with a workpiece, said expandable heat pipe having a length in the direction of expansion at ambient pressure such that the combined height of the workpiece and the heat pipe is less than the depth of the first portion of said void; and

(c) a cold plate placed in good thermal contact with the surface of said holding plate adjacent to said first portion of said void for providing a heat sink to said expandable heat pipe, said expandable heat pipe being adapted to expand during the drawing of a vacuum sufficiently to span the gap between the workpiece and said cold plate.

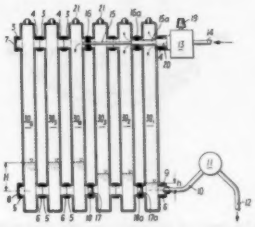
4,274,477

RADIATOR FOR LOW-PRESSURE STEAM HEATING SYSTEMS

Zivomir Nikolic, U1.V1.Nazora 24, 51262 Kraljevica, Yugoslavia

Filed Jan. 11, 1980, Ser. No. 111,218
Int. Cl.³ F28F *27/02*; F24D *9/02*
U.S. Cl. 165—101 **4 Claims**

1. A radiator for use with low-pressure steam heating systems, comprising at least two series of heating elements, each series having at least one heating element, upper and lower means for consecutively interconnecting said elements in upper and in lower portions thereof, means for independently interconnecting an upper portion of an element of each of said series to a low pressure steam source and for selectively disconnecting at least one of said series from the steam source,



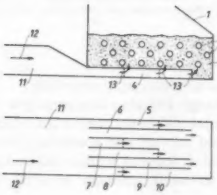
condensate drain valve means for maintaining condensate level in said elements higher than the level of said lower means for consecutively interconnecting lower portions of said elements to each other, and means for connecting said lower portions of each of said elements to said condensate drain valve means.

4,274,478

APPARATUS FOR COOLING DUST-CONTAINING GAS

Gunnar Stendahl, Linkoping, Sweden, assignor to STAL-LAVAL Apparat AB, Linkoping, Sweden

Filed Feb. 22, 1979, Ser. No. 14,104
Claims priority, application Sweden, Feb. 23, 1978, 7802096
Int. Cl.³ F28D *13/00*; F23C *11/02*
U.S. Cl. 165—104.16 **5 Claims**



1. Apparatus for cooling, feeding and distribution of dust-containing gas, comprising:

a bed containing a powdered or granular material mixture; and

means for blowing gas under pressure into said material mixture to form a fluidized bed with said material mixture being maintained floating and including a plurality of straight, horizontally extending tubes at the lower portion of the bed for the supply of the dust-containing gas, said tubes each having a different length and an orifice at each tube end within the bed, such that the orifices are distributed over the bottom area of the bed.

4,274,479

SINTERED GROOVED WICKS

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

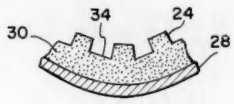
Filed Sep. 21, 1978, Ser. No. 944,541
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.26 **5 Claims**

1. A heat pipe comprising:

an outer casing means forming a vacuum tight enclosure; and

a wick means constructed from sintered material in intimate surface contact with the inner surface of the casing

means, said wick means containing at least one longitudinal capillary groove located on the surface of the wick



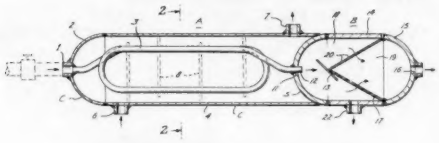
means adjacent to an open volume intended as the heat pipe vapor space and designed to provide longitudinal capillary pumping of the liquid.

4,274,480

GAS CHROMATOGRAPH SAMPLE CONDITIONER

Joseph R. McGee, 114 Howald Ct., LaPorte, Tex. 77571

Filed Sep. 25, 1978, Ser. No. 945,522
Int. Cl.³ F28B *3/00;* **F28F** *9/02;* **B01D** *15/08*
U.S. Cl. 165—111 **5 Claims**



1. A sample conditioner, comprising:
a heat exchange chamber comprising a coolant jacket with coolant inlet and outlet means for receiving and discharging a liquid coolant and a sample inlet means;
a vapor conduit located within said coolant jacket and having one terminus sealingly secured to the sample inlet means;
a series of baffles affixed within the heat exchange chamber which receive and support said vapor conduit and insure thorough circulation of a coolant about said conduit;
a separation chamber comprising a container means having an opening for receiving the second terminus of the vapor conduit which is sealingly affixed to the container means along the periphery of said opening, a vapor outlet means formed in said container means, a mist coalescer affixed along the periphery of the interior wall of said container means at a point between the second terminus of the vapor conduit and the vapor outlet means, a deflector plate located between the mist coalescer and the second terminus of the vapor conduit and a condensate outlet formed in said container means.

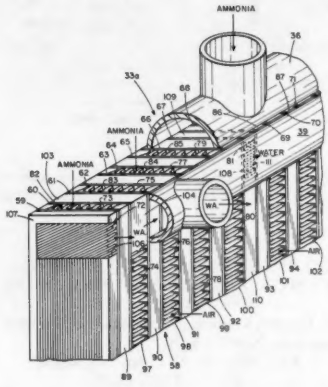
4,274,481

DRY COOLING TOWER WITH WATER AUGMENTATION

Robert G. Ireland, and Vernon N. Tramontini, both of Indianapolis, Ind., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 86,750
Int. Cl.³ F28B *9/06;* **F28F** *9/02;* **F28D** *21/00*
U.S. Cl. 165—122 **16 Claims**

1. A cooling system for condensing the exhaust steam in a power plant, comprising; a condenser for passing the exhaust system in out-of-contact heat exchange relation to a cooling fluid, a heat exchanger for cooling the cooling fluid including a plurality of spaced plates defining therebetween a plurality of side by side fluid passes, a plurality of fins in at least some of said passes, a plurality of said passes having closed sides and defining cooling fluid passes, a second plurality of said passes having closed sides and defining water passes positioned directly adjacent and in heat exchange relation with said cooling fluid passes, a third plurality of said passes being open at the sides and defining air passes, means to convey cooling fluid from the condenser to the heat exchanger cooling fluid passes, and means to convey water to the heat exchanger water passes.

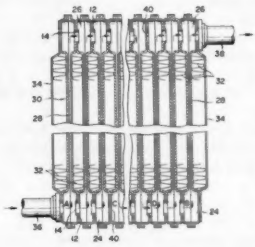


4,274,482

LAMINATED EVAPORATOR

Noriaki Sonoda, Sagamihara, Japan, assignor to Nihon Radiator Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1978, Ser. No. 935,460
Int. Cl.³ F28F *9/16, 9/22*
U.S. Cl. 165—153 **13 Claims**



1. A heat exchanger type laminated evaporator, which comprises a plurality of sets of complementary liquid passage pipe units arranged side-by-side to form flat liquid passage pipes which are formed by complementary shallow, flat portions of said units and reservoirs at each end thereof formed by complementary bulges at both ends of said flat portions, which reservoirs communicate with each other through penetrating holes in common, contiguous walls forming manifolds for the sets of said liquid passage pipes, wherein adjacent said manifolds are separated by a contiguous wall having no penetrating hole therein, and wherein the imperforate, contiguous wall between adjacent manifolds at one end of said liquid passage pipes is staggered in relation to the imperforate, contiguous wall between adjacent manifolds at the other end thereof, whereby liquid is constrained to flow in one direction from an inlet manifold through a set of said liquid passage pipes and then in the opposite direction through an adjacent set of liquid passage

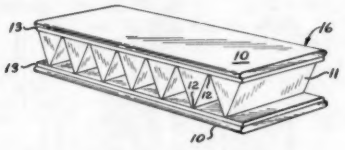
pipes and so on, until the outlet manifold is reached; and inlet means for introducing liquid into said inlet manifold; and outlet means for conducting liquid out of said outlet manifold.

4,274,483

REACTION BONDING OF FERROUS METALS

Andrew J. Cottone, and Zalman P. Saperstein, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.

Filed Aug. 1, 1979, Ser. No. 62,893
Int. Cl.³ B23K *1/20, 35/34*
U.S. Cl. 165—153 **3 Claims**



1. The method of bonding together a plurality of ferrous metal members, comprising: assembling said members with aluminum metal comprising a plurality of superimposed aluminum foil strips between and in contact with the assembled members; coating the resulting assembly with a liquid bonding composition comprising a fluxing agent, a liquid solvent having the characteristics of a Lewis base toward zinc halide as a Lewis acid by forming with said zinc halide a coordinate complex decomposing on heating while in contact with said aluminum and said ferrous metal members to yield nascent zinc, and an amount of zinc halide between about 10 weight percent of said bonding composition and substantially complete saturation of said solvent; draining said liquid bonding composition from said assembly; and heating said assembly at a temperature between about 500°–1500° F. whereby said aluminum displaces nascent zinc from said zinc halide, the nascent zinc thereby uniting with the ferrous metal to form a secure joint comprising iron-zinc alloy, said zinc halide being either zinc chloride, zinc bromide, zinc iodide or mixtures thereof.

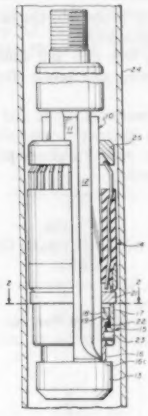
4,274,484

DUMP VALVE

Jack C. Webber, Houston, Tex., assignor to Double Diamond Company, Mathis, Tex.

Filed Oct. 26, 1979, Ser. No. 88,343
Int. Cl.³ E21B *37/10*
U.S. Cl. 166—188 **15 Claims**

1. A swab assembly comprising,
a mandrel having a flowway therethrough,
a swab cup on the mandrel, and
a dump valve supported on the mandrel below the swab cup controlling flow through said flowway as the assembly is moved upwardly,
said dump valve having a normally closed valve member supporting said swab cup and positionable in open position by said swab cup when said swab cup is subjected to a predetermined force,
said dump valve having inner and outer concentric rings with the outer ring slidable over the inner ring,
one of the rings providing said valve member,
frangible means between the inner and outer rings supporting said valve member in upper position relative to the other ring, and



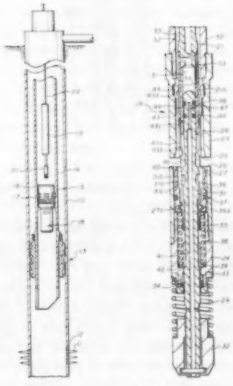
means sealing between the rings when said valve member is held in upper position.

4,274,485

METHOD AND SYSTEM FOR WELL TESTING

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 25, 1979, Ser. No. 78,712
Int. Cl.³ E21B *34/14, 43/12, 47/00;* **F16K** *31/44*
U.S. Cl. 166—250 **14 Claims**



12. A well system comprising,
a landing nipple,
a locking mandrel landed in said nipple,
a by-pass valve carried by said locking mandrel,
a valve member in said valve,
resilient means urging said valve member to one of open or closed positions,
a probe,
means for releasably latching said probe to said valve member,
said valve member moved to the other of open or closed positions by raising of said probe and to said one position by said resilient means upon lowering of said probe,
said probe released from said valve upon upward movement a selected distance beyond that movement required to move said valve member to said other position.

13. The method of testing a well having a tubing with a landing nipple and a by-pass valve in said landing nipple comprising,

running a transducer probe into the tubing and landing the probe in the by-pass valve,

alternately flowing the well and shutting in the well by raising and lowering said probe after it is landed in the valve,

determining well conditions while said well is shut-in, and

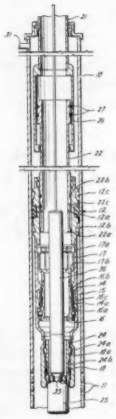
raising said probe a distance beyond that required to move the valve between open and closed positions to release the probe from the valve.

4,274,486

APPARATUS FOR AND METHOD OF OPERATING A WELL

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 16, 1979, Ser. No. 94,941
Int. Cl.³ E21B *23/02, 33/12, 34/10, 47/06*
U.S. Cl. 166—250 **9 Claims**



6. A well system comprising,

a packer having a bore therethrough, a depending foot valve, and a landing nipple,

a pressure sensing device in said landing nipple,

a foot valve actuator having a sliding seal with said packer bore and engageable with said foot valve to move said foot valve between open and closed positions,

a tubular telescoping joint attached to said actuator,

said telescoping joint having a seal area of greater diameter than said seal between the actuator and packer bore exposed to pressure externally of said joint on the actuator side of the joint and to pressure within said joint on the side opposite said actuator.

9. The method of operating a well comprising,

providing in a well a packer, a foot valve and pressure sensing means below the packer exposed to formation fluids, and a separate tubing landed in the packer providing an annulus above the packer and exterior of the tubing and including a pressure responsive valve actuator extending through the packer and engageable with said foot valve,

alternately raising and lowering annulus pressure to raise and lower said valve actuator between valve open position to flow the well and valve closed position to shut-in the well to determine flow characteristics of the well and formation pressures, and

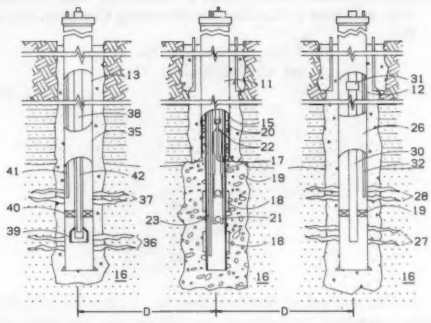
raising the tubing at any time during the test procedure to close the foot valve to isolate the formation to permit conditioning of fluids in the well above the packer.

4,274,487

INDIRECT THERMAL STIMULATION OF PRODUCTION WELLS

Frank H. Hollingsworth, Tulsa, Okla.; George R. Jenkins, Edmonton, Canada; John W. Kirkpatrick, and Lawrence N. Mower, both of Tulsa, Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jan. 11, 1979, Ser. No. 2,495
Int. Cl.³ E21B *43/24, 43/243*
U.S. Cl. 166—261 **5 Claims**



1. A method of indirectly thermally stimulating a well to be used as a production well in a thermal frontal drive in a reservoir of heavy oil or tar sands comprising of the following steps:

a. installing in said well at said reservoir a casing carrying a sand screen and installing a gravel pack around said screen and adjacent said reservoir, said pack extending above the top of said screen,

b. drilling an adjacent thermal stimulation well into said reservoir at a spacing ranging from about 10 to about 50 feet, and cementing casing in said well to at least the lowermost contact of said well and said reservoir,

c. perforating said casing of said adjacent well into said reservoir at two vertically separated zones, the lower perforations into a lower part of said reservoir and upper perforations into an upper part of said reservoir,

d. separately and simultaneously flowing an aqueous divertant through said upper perforations and forcing a thermal stimulating gas chosen from the group consisting of steam or an oxygen-containing gas through said lower perforations for in the order of 10 to 90 days, to permit local heating of organic matter in said reservoir around said production well, and

e. producing hot organic matter from said reservoir through said production well to increase the flow capacity of fluids between a more distant thermal frontal drive injection well and said production well.

4,274,488

COSURFACTANT IN PREFLUSH FOR SURFACTANT FLOOD SYSTEM

James H. Hedges, and Gilbert R. Glinsmann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1979, Ser. No. 71,608
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **13 Claims**

1. A process for recovering oil from a subterranean oil-bearing reservoir comprising the steps of:

(a) injecting into said reservoir through at least one injection well a preflush comprising water, an electrolyte, and 0.1 to 10 weight percent cosurfactant based on the total weight of said preflush;

(b) thereafter injecting into said reservoir through at least one injection well an aqueous surfactant system compris-

ing water, electrolyte, surfactant and cosurfactant, which surfactant system is characterized by forming a microemulsion by mixing with oil corresponding to that in said reservoir which microemulsion is immiscible with said oil;

(c) thereafter injecting into said reservoir through at least one injection well a drive fluid thus forcing said oil toward at least one recovery well; and

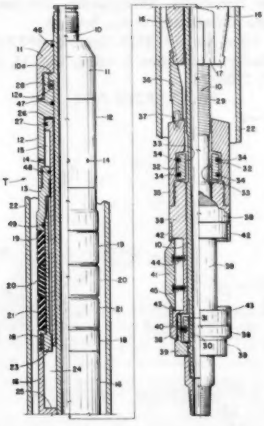
(d) recovering said oil.

4,274,489

RETRIEVABLE BRIDGE PLUG AND METHOD OF SETTING

Monty E. Harris, Cleveland, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 11, 1979, Ser. No. 47,401
Int. Cl.³ E21B *23/06, 33/129*
U.S. Cl. 166—315 **8 Claims**



7. Method for plugging off a well casing with a bridge plug tool, the tool including an elongate mandrel having a first thread segment, and a second thread segment thereon, the first thread segment being engageable with a set of lock members on the tool, and the second thread segment being engageable with a set of control members on the tool, the method comprising:

running the tool into the casing to a desired point for plugging off the casing;

positioning the mandrel during the run-in, such that the first thread segment is disengaged from the lock members, and the second thread segment is fully engaged with the control members;

rotating the mandrel several turns, to cause the mandrel to move downwardly and disengage the mandrel from the control members;

setting weight on the mandrel from above the tool, to cause the mandrel to move further downwardly and engage the first thread segment on the mandrel with the lock members;

forcing a cone member on the tool downwardly against a set of slip members, to cause the slip members to move outwardly and set against the inside wall of the casing; and

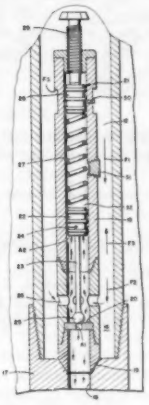
compressing a set of packing elements between the cone member and a coupling member on the tool, to cause the elements to expand and set against the inside wall of the casing.

4,274,490

INTERNAL FLUID CONTROL VALVE FOR USE IN OIL WELL REMEDIAL OPERATIONS

Leonard Huckaby, P.O. Box 152, Wayne, Okla. 73095

Filed Sep. 13, 1979, Ser. No. 74,968
Int. Cl.³ E21B *34/08*
U.S. Cl. 166—325 **5 Claims**



1. An internal control valve for use in a pipe section of a pipe string through which special fluid is passed for treating well casing perforations in oil well remedial operations, said internal control valve including, in combination:

(a) an adapter collar threadedly receivable between the lower end of said pipe section and the upper end of the next normally provided pipe section in said string, said adapter having a central reduced diameter bore;

(b) a valve seat having a lower opening communicating with said reduced diameter bore and having an upper opening for communication with the interior of said pipe section;

(c) a ball seated on said valve seat so as to be on the upstream side of any fluid flow from the interior of said pipe section through said valve seat and adapter to the remaining lower pipe sections; and

(d) means connected to said ball and responsive to a fluid pressure in said pipe section exceeding a predetermined value to lift said ball from said seat, whereby special treating fluid can be forced down through said pipe string at a pressure exceeding said predetermined pressure to pass through said valve for treating perforations in said well casing, said valve closing when said pressure applied to the treating fluid is reduced below said predetermined value, so that fluid in the said pipe section and other pipe sections thereabove is held when connecting further pipe sections.

4,274,491

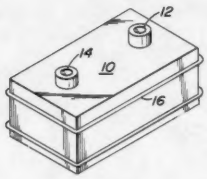
PROCESS AND APPARATUS FOR CONTINUOUS DISCHARGE OF MATERIAL AT LOCALIZED DAMAGE POINT

William B. Tarpley, Jr., West Chester, Pa., assignor to Energy and Minerals Research, Co., Exton, Pa.

Filed Sep. 26, 1978, Ser. No. 945,969
Int. Cl.³ A62C *35/10*
U.S. Cl. 169—46 **2 Claims**

1. A dispenser in combination with chamber means containing a flammable or explosive material, said dispenser comprising means defining a confined space associated with said chamber means and containing a pressurized thixotropically gelled fire suppressant, and thixotropically gelled fire suppressant comprising a thixotropically gelled suspension of fire suppressant powder pressurized by a gas selected from the group

consisting of nitrogen and carbon dioxide, said means defining said confined space being constructed of a substance selected



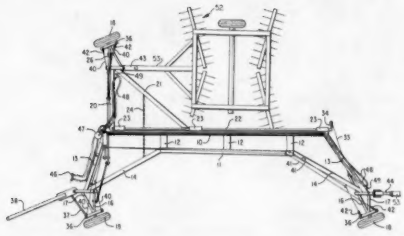
from the group consisting of breakable and meltable substances so as to allow discharge of said material when said substance is broken or melted.

4,274,492

FOLDABLE DEVICE FOR TRANSPORTING FARM IMPLEMENTS

Harold B. Peterson, R.R. 2, Larchwood, Iowa 51241

Filed Aug. 2, 1979, Ser. No. 62,909
Int. Cl.³ A01B *73/00, 69/08*
U.S. Cl. 172—285 **9 Claims**



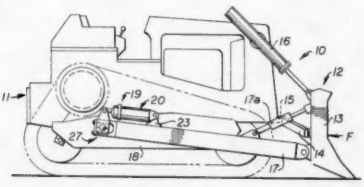
1. A device adapted to trail two farm implements on varying paths comprising a framework, wheels on said framework adapted to make it readily transportable, said framework comprising two parts hingedly connected on a longitudinal hinge line, drawbar means on each of said two parts whereby the lateral spacing of said drawbars can be varied by opening and closing of said hinged parts, said drawbars being connectable to said implements.

4,274,493

CUSHIONED BULLDOZER BLADE

Gary P. Freese, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1978, Ser. No. 969,027
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—816 **13 Claims**



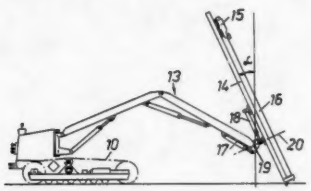
1. In a vehicle, **(10)** comprising a main frame **(15)**, a sub-frame **(18)** disposed on each outboard side of said main frame **(15)**, pivot means **(45)** for pivotally mounting said sub-frame **(18)** on said main frame **(15)**, a work tool **(13)** disposed forwardly of said main frame **(15)**, a push arm **(17)** disposed on an outboard side of said sub-frame **(18)** and having first and second ends interconnected directly between said work tool **(13)** and one of said sub-frame **(18)** and said pivot means **(45)**, respectively, the improvement comprising cushioning means **(19)** for directly absorbing pushing forces imposed on said push arm **(17)**, said cushioning means **(19)** including a cushioning cylinder **(20)** having a first end connected directly to said push arm **(17)** and a second end connected to one of said sub-frame **(18)** and said pivot means **(45)**, and lost-motion means **(30)** for connecting the second end of said push arm **(17)** on said sub-frame **(18)** and for permitting reciprocal movement of said push arm **(17)** on and relative to said sub-frame **(18)**, said cushioning cylinder **(20)** being independent of said lost-motion means **(30)**.

4,274,494

METHOD AND DEVICE FOR SETTING THE DIRECTION AND/OR THE INCLINATION OF AN ELONGATED ROCK DRILLING APPARATUS

Claes-Gustav Bergström, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Apr. 18, 1978, Ser. No. 897,515
Claims priority, application Sweden, May 16, 1977, 7705669; Aug. 4, 1977, 7708873
Int. Cl.³ E21B *7/02, 7/04*
U.S. Cl. 173—2 **12 Claims**



2. A rock drilling apparatus comprising:

a carrier **(10, 13)**;

a feed beam **(14)** pivotally mounted to said carrier so as to be pivotable in a first plane about a first axis **(19)** and to be pivotable in a second plane about a second axis **(20)** that is at right angles to said first axis **(19)**;

a rock drill **(15)** movable along said feed beam and arranged to drill a hole that is parallel with said feed beam;

first power means **(17)** coupled to said feed beam **(14)** to effect swinging of said feed beam about said first axis;

second power means **(18)** coupled to said feed beam **(14)** to effect swinging of said feed beam about said second axis;

a first member **(25)** affixed to said feed beam **(14)**;

a second member **(23,12)** universally pivotably but nonrotatably carried by said first member **(25)**;

indicating means **(21, 22)** affixed to said second member **(23, 12)** for indicating when an axis of said second member **(23)** is vertical;

means **(29)** for adjustment of said second member **(23)** relative to said first member **(25)** in order to adjust the angle between said axis of said second member **(23)** and an axis that is parallel with said feed beam **(14)**; and

means **(26,34)** coupled to said second member **(23)** for swinging said second member about said axis that is parallel with said feed beam such that said axis of said second member **(23)** follows a conical path about said axis that is parallel with said feed beam;

said indicating means **(21,22)** comprising:

a first indicating device **(21)** arranged to indicate movements of said feed beam **(14)** in said first plane irrespective of the actual relative position between said first and second members **(25** and **23**, respectively); and

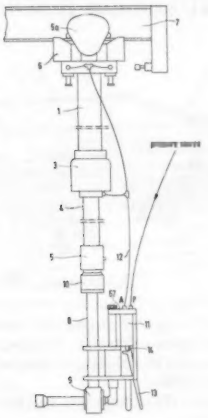
a second indicating device (22) arranged to indicate movements of said feed beam (14) in said second plane irrespective of the actual relative position between said first and second members.

4,274,495

TOOL BALANCING APPARATUS

Günter Otto, Heerweg, 7306 Denkendorf, Fed. Rep. of Germany

Filed Oct. 3, 1979, Ser. No. 81,543
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843727
Int. Cl.[3] E21B *3/00*
U.S. Cl. 173—162 R 40 Claims



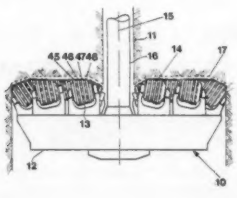
1. An extensible weight compensating means for balancing the weight of a tool, comprising a spring means for producing a tool weight-balancing force, having a first end mounted to a mounting means and having a second end which is the end capable of extension movement, means at said second end for mounting a tool thereon, and a rigid support means adapted to form a bracing connection operable between said second end of the spring means and said mounting means whereby a force produced by the tool in operation thereof is transmitted to said mounting means by by-passing the spring means.

4,274,496

METHOD AND DEVICE IN EARTH CUTTING

Bernt S. Liljekvist, and Anders E. Persson, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jan. 23, 1980, Ser. No. 114,339
Claims priority, application Sweden, Feb. 2, 1979, 7900922
Int. Cl.[3] E21B *10/16, 10/20, 10/28*
U.S. Cl. 175—57 7 Claims



1. A method of varying the distance between circular cuts made by a boring head of the type rotatable about a first axis and comprising a plurality of roller cutters, each cutter having a plurality of circumferentially extending rows of cutting means, which rows are spaced along a second axis of rotation of said cutter, and a plurality of mounting means arranged in pairs, the mounting means of each pair being located on opposite sides of said first axis and at the same distance therefrom, said cutters being interchangeable in said mounting means, said method comprising the steps of:

providing said roller cutters in the form of different first and second sets of roller cutters, each roller cutter in a set having the same number of rows of cutting means as the other roller cutters of such set, and the number of rows of cutting means on one cutter of said first set being at least as great as the number of rows of cutting means on one cutter of said second set, and

selectively interchanging cutters of said first and second sets relative to at least a first pair of mounting means between first and second modes of operation whereby:

in said first mode said one cutter of said first set and said one cutter of said second set are mounted in said first pair of mounting means so that at least one row of cutting means of said one cutter of said first set makes a circular cut having a radius different than the radii of circular cuts made by the rows of cutting means of said one cutter of said second set, and

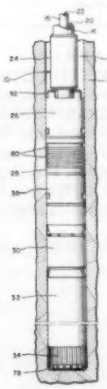
in said second mode two cutters of the same set are mounted in said first pair of mounting means so that at least one row of cutting means of one of said two cutters makes a circular cut having a radius equal to the radius of a circular cut made by a row of cutting means of the other of said two cutters.

4,274,497

SKIRTED HAMMER SUB FOR DUAL TUBE DRILLING

Clyde A. Willis, Wichita, and George A. Ford, Houston, both of Tex., assignors to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Apr. 11, 1977, Ser. No. 786,449
Int. Cl.[3] E21B *49/02*
U.S. Cl. 175—100 13 Claims



1. A crossover sub for interconnecting a dual concentric drill string with a fluid hammer for driving a percussion bit, comprising:

means for receiving fluid from the annular space defined between the inner and outer tubular elements of said drill string;

means for directing said fluid to said hammer for operation thereof;

a tubular skirt at one end of said sub adapted to encircle said hammer and to define therebetween means for receiving exhaust fluid and entrained cuttings from said bit; and

means for directing said exhaust fluid and entrained cuttings into the inner tubular element of said drill string.

4,274,498

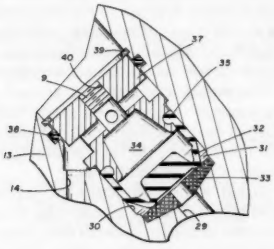
ROCK BIT LUBRICATION SYSTEM UTILIZING EXPELLABLE PLUG FOR OBTAINING EXPANSION SPACE

Samuel L. Penny, Lancaster, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 812,287, Jul. 1, 1977. This application May 7, 1979, Ser. No. 36,472

Int. Cl.³ E21B *10/24*

U.S. Cl. 175—228 **4 Claims**



1. A method of constructing a lubrication system for a rotary rock bit, comprising the steps of:

providing a lubricant reservoir cavity in said rotary rock bit;

positioning a flexible diaphragm in said lubricant reservoir cavity so that the flexible diaphragm divides the cavity into a lubricant portion and an expansion portion;

positioning a low melting point plug in said expansion portion;

filling said lubricant portion of said lubricant reservoir cavity with a lubricant; and

raising the temperature of said low melting point plug causing said plug to melt and run out of said expansion portion of said lubricant reservoir.

4,274,499

PROCESS AND DEVICE FOR CONTROLLING THE CONTENT OF CLOSED PACKAGES AS TO COMPLETENESS

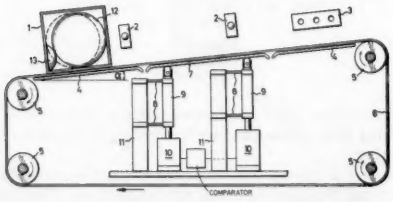
Hermann Grimminger, Hofheim, and Hans-Joachim Reimer, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,942

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806281

Int. Cl.³ G01G *15/00*

U.S. Cl. 177—1 **6 Claims**



1. A process for controlling as to completeness the content of closed packages wherein a plurality of packed articles are distributed over the volume of the package and not fixed therein, which process comprises the steps of moving the package along an inclined plane, measuring the distribution of weight in the package at said inclined plane by simultaneously measuring the weight of the package at at least two spaced points on said plane, and comparing the measured value of the weight distribution as determined by comparing the values of said simultaneous measurements with a specific limiting value.

4,274,500

ELECTRICALLY PRICE-CALCULATING BALANCE

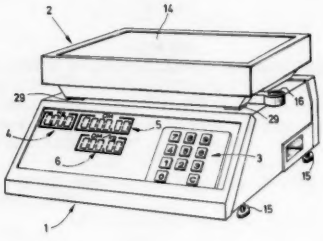
Ernst Kuhnle, Balingen, Fed. Rep. of Germany, assignor to Bizerba-Werke Wilhelm Kraut KG, Balingen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,843

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836010

Int. Cl.³ G01G *23/22, 21/00, 21/28*

U.S. Cl. 177—25 **5 Claims**



1. An electrically price-calculating balance, comprising

(a) an indicator unit (1) including an upper generally horizontal support surface;

(b) a weighing unit (2) mounted on said indicator unit support surface; and

(c) hinge means for pivotally connecting said weighing unit with said indicator unit, said hinge means including

(1) stub means (21) extending downwardly from the lower surface of said weighing unit adjacent the rear face thereof; and

(2) clip means (23) having a fork-like configuration and extending upwardly from said indicator unit support surface, said clip means being adapted to receive said stub means.

4,274,501

MASS AND FORCE METER

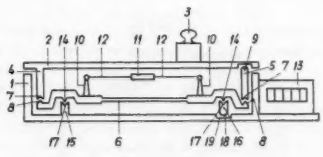
Mario Gallo, and Johannes Wirth, both of Zurich, Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland

Filed Nov. 28, 1979, Ser. No. 98,028

Claims priority, application European Pat. Off., Sep. 19, 1979, 792005258

Int. Cl.³ G01G *3/16*

U.S. Cl. 177—210 FP **6 Claims**



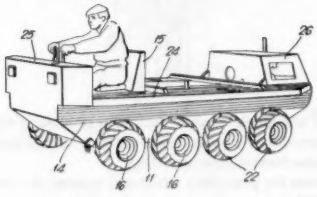
1. In a mass and force meter a frame, a load support, a measuring system receiving only a part of the weight of the mass to be measured or of the force to be measured, an intermediate body mounted between said frame and said load support comprising two rigid parts linked by at least one resilient part, a

number of load connections on said rigid parts by means of which said load support is supported by said intermediate body, an equal number of supporting connections on said rigid parts by means of which said intermediate body is supported by said frame, a spring mounted on each of said rigid parts, said springs being outside the plane of said resilient part and having free ends connected to said measuring system.

4,274,502
ALL-TERRAIN AMPHIBIOUS VEHICLE

Michael Somerton-Rayner, Thatchway, Quarley, Nr. Andover, Hampshire, England

Filed Apr. 3, 1979, Ser. No. 26,692
Int. Cl.³ B62D *11/02*
U.S. Cl. 180—6.2 **9 Claims**



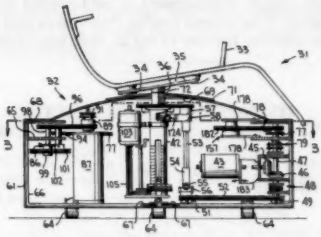
9. An automotive vehicle having
a chassis having first and second longitudinally extending frame members each disposed along a different side of said vehicle,
a first set of fixed stub shafts each mounted along said first frame member,
a second set of fixed stub shafts each mounted along said second frame member,
a ground engaging wheel mounted on each of said stub shafts,
a generally annular tire mounted on each said ground engaging wheel,
means for rotating said wheels mounted on said first set of stub shafts at the same rates of rotation,
means for rotating said wheels mounted on said second set of stub shafts at the same rates of rotation,
means capable of controlling the relative rates of rotation of said wheels associated with said first and said second sets of stub shafts whereby to steer said vehicle, and
means for reducing wandering of said vehicle,
said means for reducing including means for angling said wheels inward and downward at an angle of approximately 5 degrees from the vertical axis of said vehicle.

4,274,503
POWER OPERATED WHEELCHAIR

Charles Mackintosh, 3838 Oakwood Ave., Los Angeles, Calif. 90004

Filed Sep. 24, 1979, Ser. No. 78,096
Int. Cl.³ B62D *61/10*
U.S. Cl. 180—23 **23 Claims**

1. A wheelchair assembly including a seat having a plurality of ground-engaging wheels, comprising, a undercarriage on which said wheels are mounted for rolling movement about horizontal axes lying parallel to one another, means engaging said wheels for simultaneously driving same in at least one rolling direction, said wheels being mounted for pivotal movement about vertical axes, means engaging said wheels for simultaneously steering same by pivoting said wheels together about said vertical axes, said seat being mounted on said undercarriage for rotary movement about a vertical axis, said steering means being coupled with said seat for effecting the rotary movement thereof, and control means for operating said driving means and said steering means, whereby both said wheels

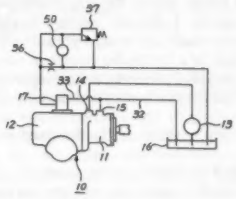


and said seat are moved about their respective axes by said steering means upon actuation of said control means.

4,274,504
POWER STEERING DEVICE

Minoru Kawabata, Aichi; Mikio Suzuki, Hekinan, and Kenji Takahashi, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki K., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 17, 1979, Ser. No. 67,456
Claims priority, application Japan, Aug. 24, 1978, 53-103113; Aug. 24, 1978, 53-103114
Int. Cl.³ B62D *5/08*
U.S. Cl. 180—143 **5 Claims**



2. A power steering device for a vehicle comprising:
a hydraulic actuator having two cylinder chambers for supplementing manual steering torque;
servo valve means for controlling directions of fluid pressure to be supplied to said hydraulic actuator in response to manual steering;
a valve housing formed with first and second ports respectively communicating said two cylinder chambers of said hydraulic actuator;
a first spool valve member slidably received in said valve housing and provided with bottom and stepped portions to be supplied with a steering pressure generated in response to the manual steering torque from said first and second ports, respectively, for movement in one direction, said bottom portion being provided with a third port communicating with said first port;
a second spool valve member slidably received in said first spool valve member and supplied with a control pressure depending upon the vehicle speed for movement in the one direction relative to said first spool valve member;
bypass means formed on said first and second spool valve members to be opened by the displacement of said second spool valve member relative to said first spool valve member caused by the control pressure to communicate said first and second ports with each other; and
first spring means interposed between said valve housing and said second valve member to urge said second spool valve member in the other direction to close said bypass means and second spring means between said first and second

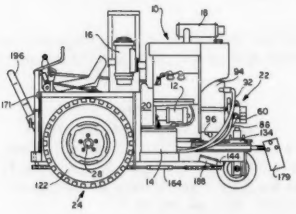
spool valve members to urge said second spool valve member in the one direction, said first and second spring means being calibrated in such a manner that the displacement of said first spool valve member by the steering torque causes displacement of said second spool valve member by an amount smaller than that of said first spool valve member thereby to act to close said bypass means.

4,274,505

HYDROSTATIC-DRIVE TRACTOR

Gale E. Maust, 8669 Pigeon Rd., Bay Port, Mich. 48720

Filed Sep. 18, 1978, Ser. No. 942,927
Int. Cl.[3] B60K *5/00*
U.S. Cl. 180—215 **20 Claims**



1. A narrow gauge, hydrostatic-drive tractor comprising an air-cooled prime mover having a rearwardly-projecting drive shaft, a variable-displacement, reversible hydraulic pump having a forwardly-projecting driven shaft coupled with the drive shaft of said prime mover by direct mechanical coupling, a fixed-displacement hydraulic motor having a forwardly-projecting drive shaft and being hydraulically-coupled to said pump by means of a hydraulic circuit in which the output of said pump is supplied directly to the input of said motor and the output of said motor is supplied directly to the input of said pump;

a fan and fan housing at the forward end of said prime mover;

an air conduit means extending vertically-upward from said fan housing for supplying ambient air to cool said prime mover;

cooling means disposed in said air conduit means in heat-exchange with the ambient air drawn in, said cooling means functioning to cool the hydraulic fluid in said hydraulic circuit, and said motor being disposed directly beneath said fan housing with its drive shaft projecting beyond said housing;

differential means having transverse axles and a rearwardly-projecting driven shaft which driven shaft is disposed directly above the drive shaft of said motor and mechanically-coupled thereto; and drive wheels mounted on said axles.

4,274,506

NOISE SHIELD

Rolf B. J. R. Blomgren, Akerbyvagen 98, S-103 35 Täy, and Nils H. Edlund, Nybygget, Sandemar, S-130 54 Dalarö, both of Sweden

Filed Sep. 26, 1978, Ser. No. 946,037
Claims priority, application Sweden, Sep. 28, 1977, 7710836
Int. Cl.[3] E04B *1/82*; E04H *17/00*
U.S. Cl. 181—210 **8 Claims**

1. A noise shield adapted for mounting on a piece of ground for the reduction of noise produced from external sources, comprising:

at least two posts anchored into said ground;

a plurality of support beams mounted on said posts and extending between said at least two posts in a substantially perpendicular orientation therewith; and

shielding means supported by said plurality of support beams for providing a shield against said noise being generated from said external sources, said shielding means further comprising a plurality of shield module means assembled together to form a plurality of row-like shields, each of said plurality of row-like shields being supported by one of said plurality of support beams, all of said plurality of row-like shields collectively constituting said shielding means, each of said plurality of shield module means including a noise absorbent means removably inserted into

each of said shield module means for absorbing said noise being generated from said external sources, the removable noise absorbent means including,

frame means for providing structural support for said noise absorbent means,

a noise absorbent material supported within said frame means, and

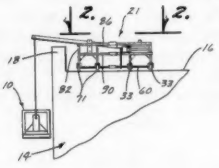
a plurality of substantially parallel planks supported within said frame means and positioned adjacent to said noise absorbent material within said frame means.

4,274,507

PORTABLE SUPPORT FOR A SCAFFOLD

Albert Williams, 4506 Laurel Ave., Omaha, Nebr. 68104

Filed Aug. 1, 1979, Ser. No. 62,723
Int. Cl.[3] E04G *3/10*
U.S. Cl. 182—12 **6 Claims**



1. A portable support for a scaffold, comprising, a first portable wheeled support member, a plurality of weights on said first support member, an elongated member having one end pivotally connected to

said first suppport member, a second portable wheeled support member spaced from said first

support member, said elongated member being connected, intermediate its length,

to said second support member, the other end of said elongated member being adapted to support

a scaffold extending downwardly therefrom, and length-adjustable means operatively secured to and extending between said support members whereby, upon extension of said length-adjustable means, the leverage afforded by said plurality of weights is increased.

4,274,508

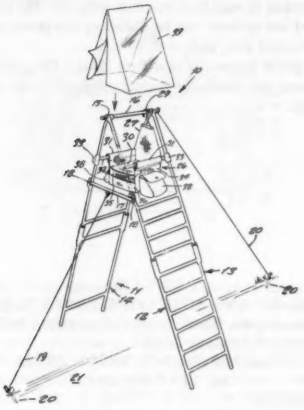
OUTLOOK LADDER SEAT

Tommy L. Hughes, c/o George Spector 3615 Woolworth Building, 233 Broadway, and George Spector, 3615 Woolworth Building, 233 Broadway, both of New York, N.Y. 10007

Filed Feb. 20, 1980, Ser. No. 123,006

Int. Cl.³ E06C *7/16*

U.S. Cl. 182—116 **3 Claims**



1. An outlook ladder seat, comprising in combination, a collapsible A-frame made of tubular aluminum one leg of said A-frame including a ladder, and a seat suspended from a top of said A-frame, a triangular tent removably fitted over a top of said A-frame enclosing said seat from overhead rain.

4,274,509

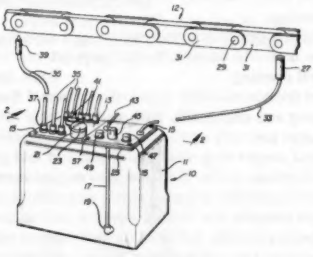
ELECTRICAL LUBRICATING APPARATUS

Ronald E. Thomson, Cambridge, and Robert M. Dombroski, McFarland, both of Wis., assignors to Madison-Kipp Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 909,480, May 25, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,322

Int. Cl.³ F16N *7/24*

U.S. Cl. 184—15 B **13 Claims**



11. In electrical lubricating apparatus for applying shots of lubricating fluid to a movable mechanical system, including a pump for receiving lubricating fluid and dispensing shots of lubricating fluid through at least one conduit line to said movable mechanical system in response to sensing means sensing the movement of said mechanical system, the improvement comprising:

said sensing means including trigger means for generating electrical trigger pulses responsive to said sensing means sensing the movement of said mechanical system; and

an electrical constant pulse width generator coupled to said trigger means, said constant pulse width generator being triggered by said trigger pulses to generate constant pulse width pulses, said constant pulse width pulses being coupled to said pump and enabling said pump to deliver metered shots of lubricating fluid to said movable mechanical system for a precise time interval corresponding to said constant pulse width.

4,274,510

MULTI-DIRECTIONAL SUSPENSION MEANS FOR ROTOR AIRCRAFT

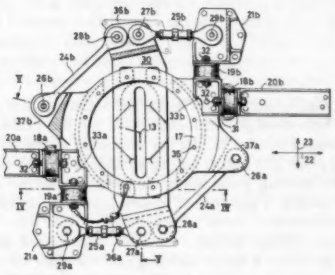
Rene L. Mouille, Aix en Provence, and Edwin Ortega, Marseilles, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 19, 1979, Ser. No. 21,778

Claims priority, application France, Mar. 20, 1978, 78 08001; Nov. 15, 1978, 78 32281

Int. Cl.³ B64C *27/00*; B64D *27/00*

U.S. Cl. 188—1 B **14 Claims**



1. A multidirectional suspension system for a member carried by a support in a fixed structure, the member being subject to torque about an axis of rotation and to static and dynamic stresses in directions perpendicular to said axis, said suspension system absorbing the torque into the fixed structure and providing an elastic connection between the said member and the fixed structure so as to transmit static stresses and simultaneously dampen vibration, said suspension system comprising:

a baseplate fixed to said member for conjoint movement therewith and situated in a plane substantially perpendicular to said axis of rotation, said baseplate having a pair of diametrically opposed radially extending shoulders,

a rigid cross member extending diametrically between the shoulders of said baseplate and disposed freely between said baseplate and said fixed structure,

two sets of first and second fittings secured to the fixed structure and disposed symmetrically on opposite sides of said baseplate in association with said respective shoulders, and in proximity to the respective ends of said cross member,

said shoulders and said first fittings having paired bearing surfaces extending parallel to a first direction perpendicular to the axis of rotation, said shoulders and said second fittings having paired bearing surfaces extending parallel to a second direction perpendicular to both the axis of rotation and said first direction,

resilient compression means secured between each of said paired bearing surfaces permitting translatory deflection of said baseplate in each of said first and second directions,

first link rods articulatingly connecting each end of said cross member with the first fitting in the set of fixed fittings proximate thereto,

second link rods extending opposite to said first link rods and articulatingly connecting each of the ends of the cross member and said baseplate adjacent the shoulder associated with the set of fittings remote from the end of said cross member, said link rods being adapted to resiliently

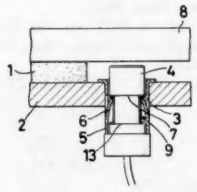
inhibit said baseplate from rotating about said axis and being articulatable during translatory movement.

4,274,511

ARRANGEMENT FOR MOUNTING A WEAR DETECTOR FOR BRAKE PAD

Michio Moriya, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 29, 1979, Ser. No. 70,832
Claims priority, application Japan, Sep. 18, 1978, 53-128915
Int. Cl.³ F16D *66/02*
U.S. Cl. 188—1 A **1 Claim**



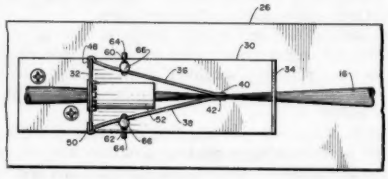
1. A wear detector for a brake pad and means for mounting it in a hole through a backing plate for the brake pad and comprising a tubular holder for mounting in the hole in said backing plate, said holder having a flange at the top engageable with the backing plate when the holder is in the hole, and further having a plurality of claws projecting inwardly into said holder, and a sleeve mounted around said wear detector, said wear detector having a shoulder therearound, said sleeve having at its top a flange abutting said shoulder on said wear detector, said sleeve having a slit extending axially throughout the height thereof for enabling the sleeve to be mounted on said wear detector, said claws on the holder engaging the flange on said sleeve to hold said sleeve and said wear detector in position in said holder.

4,274,512

ROVING BRAKE

David W. Goelz, Burbank, Calif., assignor to Poly-Glas Systems, Sun Valley, Calif.

Continuation-in-part of Ser. No. 871,284, Jan. 23, 1978, abandoned. This application Jan. 29, 1979, Ser. No. 7,074
Int. Cl.³ B65H *59/10*
U.S. Cl. 188—65.1 **2 Claims**



1. A braking device for maintaining tension on roving comprising:

a U-shaped bracket having a base portion with first and second parallel flanges extending outwardly therefrom;

said first flange having parallel side edges;

mounting means for mounting said bracket to a surface such as a boom;

a pair of leaf springs located between said first and second flanges and respectively mounted on said side edges of said first flange, said pair of leaf springs extending toward one another with only a short portion at one terminal end of said leaf springs in mutually biased engagement;

said leaf springs each having a preformed flange on the other end thereof adapted to slidably engage the respective side edges of said first flange;

abutment means abutting an outer surface of each said spring for holding said one end of said springs in mutually biased relationship and said preformed flanges of said springs on said first flange;

each said abutment means comprising a post extending through an elongated slot in said base portion and being connected to said base portion, whereby the biasing force of said leaf springs may be varied by the positioning of said post in said slot; and

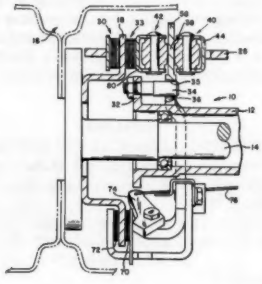
roving guide means in said first flange for guiding roving between the mutually biased engaged ends of said leaf springs.

4,274,513

DISC BRAKE AND ACTUATING LEVER THEREFOR

John T. Kasselmann, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 26, 1979, Ser. No. 23,929
Int. Cl.³ F16D *55/224*
U.S. Cl. 188—72.7 **3 Claims**



1. A disc brake assembly and actuator therefor comprising, in combination:

a rotatable member rotating relative to a support;

a frame movably carried by said support and including a central opening;

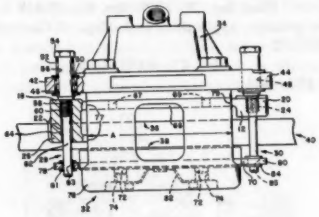
a pair of friction elements disposed within said frame central opening and engageable with said rotatable member; and

an actuator assembly extending into said frame central opening and cooperating with said frame and said pair of friction elements to bias the latter into engagement with said rotatable member as said actuator assembly moves from a neutral position to a braking position, said actuator assembly being pivotally mounted on said support substantially adjacent said pair of friction elements, said actuator assembly being engageable with said rotatable member substantially remote from said pair of friction elements such that said rotatable member moves said actuator assembly within said frame central opening from the neutral position to the braking position, said actuator assembly including a cam member and a pair of rollers, said frame central opening receiving said cam and said pair of rollers, and the movement of said actuator assembly causing said pair of rollers to separate from each other to bias said pair of friction elements into engagement with said rotatable member.

4,274,514
PIN SLIDER DISC BRAKE

Robert T. DuCharme, and Robert E. Herzog, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 937,679, Aug. 28, 1978, abandoned.
This application Sep. 26, 1979, Ser. No. 78,854
Int. Cl.[3] F16D 55/224
U.S. Cl. 188—73.3 1 Claim

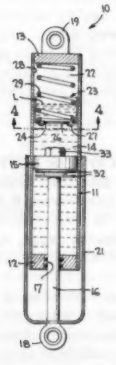


1. In a disc brake assembly having a torque member which is fixedly coupled to a vehicle frame adjacent a rotatable disc, a caliper movably disposed relative to the torque member and extending over a portion of the periphery of the disc, a pair of brake shoes which are movable into engagement with the disc, and at least one pin cooperating with the torque member and the caliper to form a slidable collection therebetween, the improvement wherein the torque member includes a flange extending axially over the periphery of the disc, said flange including a bore for receiving the one pin, said flange also defining an abutment surface slidably engageable with said caliper to absorb braking torque, said bore extending through said flange adjacent said abutment surface and including a first portion threadably engaging the one pin and a second adjoining portion defining a clearance with the one pin, said slidable connection being defined by a thermoplastic sleeve on the one pin and a resilient bushing on the caliper, said resilient bushing forming an opening to slidably receive said thermo-plastic sleeve, and the one pin threadably engaging the torque member and including a recess to carry and retain said thermo-plastic sleeve independently of the torque member.

4,274,515
SHOCK ABSORBER

Christian Bourcier de Carbon, 64, Boulevard Maurice-Barres, 92, Neuilly-sur-Seine, France

Filed Mar. 28, 1979, Ser. No. 24,715
Claims priority, application France, Mar. 29, 1978, 78 09031
Int. Cl.[3] F16F 9/06, 9/40
U.S. Cl. 188—269 9 Claims

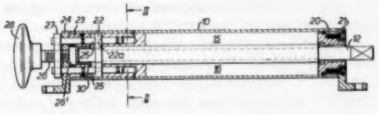


1. In a shock absorber of the hydraulic-pneumatic type including a cylindrical casing enclosing a cylindrical chamber and having upper and lower ends thereof sealed closed, piston means disposed for reciprocation in said chamber, a piston rod extending from said piston means outwardly through a packed opening in one of said ends, said chamber being partially filled with a liquid damping medium, the level of said liquid being spaced below said upper end, said piston means being adapted to move in said damping liquid and dividing said chamber into two portions of reciprocally variable capacity, said piston means including a piston having valve controlled passages to facilitate passage of said liquid from one of said chamber portions to the other as said piston reciprocates, a quantity of gaseous fluid under superatmospheric pressure occupying the space above said liquid level, and means located in the vicinity of the boundary surface between said liquid and said gaseous fluid for minimizing any liquid-gas emulsion, the improvement wherein: said minimizing means comprising a cup-shaped anti-splash device including a partition having at least one opening therein, said partition being surrounded by a side wall of oval-shaped cross-section, said side wall being inwardly deformable along its major axis for effecting a frictional engagement between said device and said casing; said device at an initial position lying slightly below said level of said liquid damping medium and being frictionally mounted at a predetermined frictional force which exceeds the force exerted on said partition by said liquid damping medium during its movement upon reciprocation of said piston; said anti-splash device and said piston means being arranged relative to each other as to permit contact therebetween during reciprocation of said piston toward said device; said frictional force being less than the force exerted by said piston during its reciprocation; and said anti-splash device having means thereon extending outwardly of said partition for spacing said partition away from said piston during said contact between said device and said piston means; whereby flow of said liquid between opposite sides of said piston is unimpeded during reciprocation of said piston means against said anti-splash device, and whereby any oil-gas emulsion is avoided during piston reciprocation by reason of said device lying at said initial position below said liquid level, said partition remaining stationary in said casing during the movement of said liquid damping medium upon reciprocation of said piston, although said partition is displaceable upon impact by said piston during said reciprocation.

4,274,516
ROTARY VIBRATION DAMPERS

Geoffrey W. Barley, Kislingbury, England, assignor to UOP Inc., Des Plaines, Ill.

Filed May 16, 1979, Ser. No. 39,635
Claims priority, application United Kingdom, May 20, 1978, 20979/78
Int. Cl.[3] F16F 9/14, 9/34
U.S. Cl. 188—310 6 Claims



1. A rotary vibration damper comprising,
a housing,
a rotor,
one or more vanes secured to said rotor,
means mounting said rotor for rotational oscillatory movement within and relative to said housing,
the housing having an arcuate wall and other walls co-operable with said vane or vanes to define chambers which, in use, are filled with damper fluid and whose volumes are complementary, the relative volumes of the complemen-

tary chambers being variable in dependence on the rotational position of the vane or vanes,

means defining one or more restricted fluid flow paths interconnecting the complementary chambers through which vibration-damper fluid can flow at a restricted rate,

the damper further comprising

a partition wall member and,

means mounting said partition wall member for movement along the rotary axis of the vane of said damper within a constant volume damper fluid-filled space and the flow area of the restricted flow path or paths being dependent on the axial position of said member, said partition wall member being a piston mounted within the housing and having a leakage path through or thereabout to allow a leakage flow of damper fluid to pass from one side of the partition wall member to the other and thereby permit said axial movement of the partition wall member.

4,274,517

HYDRAULIC SHOCK ABSORBER

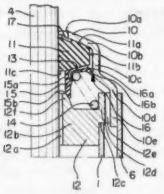
Tetuo Kato, Musashino, and Ieaki Miura, Yokohama, both of Japan, assignors to Tokico, Ltd., Kawasaki, Japan

Filed Mar. 30, 1979, Ser. No. 25,745

Claims priority, application Japan, Apr. 1, 1978, 53-42874[U]

Int. Cl.[3] F16F *9/36*

U.S. Cl. 188—315 **3 Claims**



1. A double tube type hydraulic shock absorber comprising:

an inner cylinder filled with a working fluid and an outer cylinder surrounding said inner cylinder and defining an annular reservoir chamber with said inner cylinder, the lower portion of said reservoir chamber being filled with working fluid and the upper portion of said reservoir chamber being filled with pressurized gas, a piston slidable within the inner cylinder and having a piston rod thereon protruding from one end of the inner cylinder, a piston rod guide closing said one end of the inner cylinder and having a valve seat thereon, said piston rod being spaced from said rod guide for defining therebetween a passage for connecting the inner cylinder with the reservoir chamber, a cap closing the one end of said outer cylinder, a seal member spaced outwardly along said piston rod from said rod guide, a spring loaded annular retaining plate acting on the lower side of said seal member for urging said seal member against the inner surface of said cap, said seal member being slidable along the piston rod toward the interior of the cylinder against the action of said retaining plate for forming a gas filling inlet between the inner surface of said cap and the outer surface of said seal member, a non-return valve having a lip-like valve member and being firmly attached to the annular retaining plate and said lip-like valve member being resiliently urged against the valve seat on the rod guide for permitting flow of gas from said passage and blocking flow of gas in the opposite direction, and a further valve member for further sealing said gas filling inlet, said further valve member being secured to said annular retaining plate on the opposite face of said retaining plate from said seal member at or close to the outer periphery thereof and having a resilient lip extending beyond the outer periphery of said retaining plate and abutting the inner surface of said cap and curving away from said seal member for permitting flow of gas from said gas inlet into said outer cylinder and blocking flow of gas in the opposite direction.

4,274,518

BRAKE FORCE REGULATOR FOR A MOTORCYCLE HYDRAULIC BRAKE SYSTEM

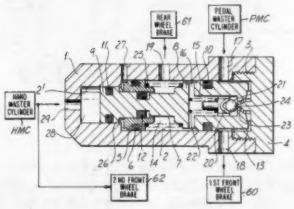
Volker Berisch, Hattersheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 20, 1979, Ser. No. 77,418

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847562

Int. Cl.[3] B60T *8/26*

U.S. Cl. 188—344 **9 Claims**



1. A brake force regulator for a motorcycle hydraulic brake system having a rear-wheel brake and a first front-wheel brake actuated by pressure from a pedal master cylinder, and a second front-wheel brake actuated by pressure from a hand master cylinder, said brake force regulator controlling the pressure supplied to said rear-wheel brake dependent on the pressure produced by said hand master cylinder during the time when said pedal master cylinder and said hand master cylinder are simultaneously actuated, said brake force regulator comprising:

a control piston including

a stepped piston portion disposed in and coaxial of a longitudinal axis of a housing axially slidable against the force of a control spring, said stepped piston portion having a first effective area exposed to the pressure from said pedal master cylinder and a second effective area exposed to the pressure in said rear-wheel brake, and

a pressure piston portion disposed in said housing coaxial of said axis in tandem relationship with said stepped piston portion, said pressure piston portion having one end surface thereof in permanent association with the end surface of the smaller step of said stepped piston portion and the other end surface receiving pressure supplied by said hand master cylinder; and

a valve disposed in a bore of said stepped piston portion coaxial of said axis, said valve being closed upon displacement of said stepped piston portion and said pressure piston portion against the force of said control spring to interrupt a fluid connection through said bore from said pedal master cylinder to said rear-wheel brake.

4,274,519

LOCK-UP CLUTCH FOR A HYDRAULIC UNIT

Shuzo Moroto, Handa, and Kouji Kobayashi, Toyoda, both of Japan, assignors to Aisin-Warner K.K., Aichi, Japan

Filed Apr. 19, 1979, Ser. No. 31,505

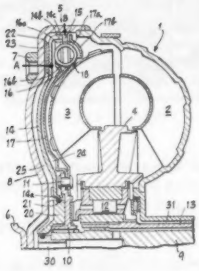
Claims priority, application Japan, Apr. 28, 1978, 53-51162

Int. Cl.[3] F16D *3/66*

U.S. Cl. 192—3.28 **8 Claims**

1. A torque converter consisting of a pump impeller connected mechanically with a power shaft of a prime mover; a turbine runner which transmits a driving force given by said pump impeller through a fluid to said power shaft; a lock-up clutch which is installed between said pump impeller and said turbine runner to transmit directly input from the power shaft

of said prime mover to said turbine runner by mechanical connection without an intermediate fluid; a vibration damper which is installed outside of the circulation flow passage of said fluid near the inlet opening of said turbine runner to absorb the torsional vibration from the prime mover or the power shaft when said lock-up clutch is operated; a stator which forces the circulating flow of the fluid to said pump impeller from said turbine runner; and a one-way clutch which restricts unilaterally the direction of rotation of said stator; said lock-up clutch consisting of an annular piston having a power transmission surface which is a friction material engaging a power transmission surface installed on a casing connecting with said pump impeller and movable in an axial direction, a driving plate connected with said annular piston to be driven on the plane



crossing at nearly right angles to the axis of the torque converter, a driven plate equipped between said turbine runner and said annular piston, a resistance member placed between said driving plate and said driven plate to give a proper drag resistance to the relative rotational motion of said driving plate and said driven plate, and a plain bearing supporting the reciprocating motion of said annular piston and the relative rotatory motion of said turbine runner and said casing; said vibration damper being between the outside circumference of said driven plate which is fixed to the root of said turbine runner at its inside circumference and having an outside diameter nearly equal to the entrance diameter of said turbine runner and the inside circumference of said driving plate, the outside circumference of said driving plate being connected with the outside circumference of said annular piston.

4,274,520

TRANSMISSION HAVING VARIABLE V-BELT UNIT AND HYDRODYNAMIC UNIT

Frederik E. C. Van der Hardt Aberson, Eindhoven, Netherlands, assignor to Van Doorne's Transmissie B.V., Tilburg, Netherlands

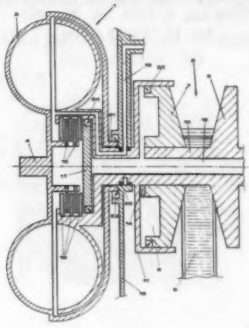
Filed Jul. 16, 1979, Ser. No. 58,111

Claims priority, application Netherlands, Jul. 14, 1978, 7807579

Int. Cl.[3] **B60K** *41/02;* **F16H** *55/52*

U.S. Cl. 192—3.32 **3 Claims**

1. A transmission comprising a hydrodynamic transmission unit having an output drivingly connected to the input of a variable ratio V-belt transmission unit, the hydrodynamic transmission unit including a lock-up means operative to lock the hydrodynamic transmission unit in a direct-drive mode and the variable ratio V-belt transmission unit having a fluid pressure cylinder which controls the axial position of a conical pulley disc forming part of the V-belt transmission unit to thereby control the ratio of the V-belt transmission unit, and control means responsive to the fluid pressure in said fluid



pressure cylinder for actuating said direct-drive lock-up means.

4,274,521

SYNCHRONIZED HYDROPNEUMATIC CONTROL OF CLUTCH AND GEARBOX

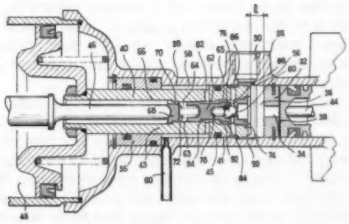
Leonardo Cadeddu, Crema, Italy, assignor to Benditalia S.p.A., Crema, Italy

Filed Mar. 16, 1979, Ser. No. 21,039

Claims priority, application Italy, Mar. 23, 1978, 21540 A/78

Int. Cl.[3] **B60K** *41/22;* **F16D** *67/00*

U.S. Cl. 192—3.57 **4 Claims**

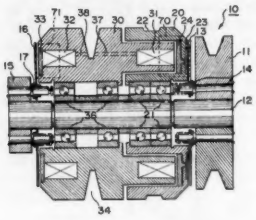


1. A hydropneumatic clutch control for a motor vehicle, comprising a casing provided with a bore which slidably receives a control piston, the latter being movable from a rest position under the influence of hydraulic pressure received in a chamber and with the assistance of a pneumatic motor, the latter being supplied with compressed air through a feed valve controlled by a second piston movable under the influence of the hydraulic pressure in said chamber, said vehicle comprising a source of pressurized fluid and a hydraulic utilizing circuit, said hydropneumatic clutch control being characterized in that said control piston comprises a larger diameter portion and a smaller diameter portion and defines with said bore an auxiliary chamber which communicates with said chamber through a pilot valve which is mounted in said control piston and which is normally open when the pressure prevailing in said chamber is substantially zero, said auxiliary chamber being connected to said utilizing circuit for supplying the latter with fluid under pressure when said control piston is displaced away from its rest position.

4,274,522
LOW SPEED ADAPTOR

Cheu H. Min, 81, Sec. 6, Tswei Hua St., Pan Chiao City, Taiwan

Filed Jan. 4, 1979, Ser. No. 918
Int. Cl.[3] F16D 67/06
U.S. Cl. 192—9 4 Claims



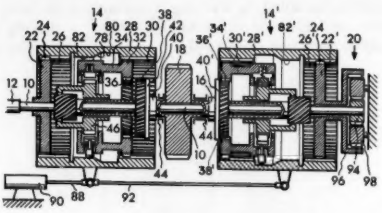
1. An adaptor for changing the sewing speed of a sewing machine driven by a main motor comprising:
- a clutch member having a grooved rim to serve as a first transmission belt pulley adapted for engaging, by means of a first transmission belt, the pulley of an auxiliary motor rotating at a low speed;
- an adaptor body provided with a grooved rim, a clutch winding at one end and a brake winding at the other end to provide distinct magnetic paths when energized, said clutch member being disposed adjacent to said clutch winding;
- a shaft having two ends and on which said adaptor body and clutch member are rotatably mounted, said shaft extending through the central axis of said adaptor body and said clutch member;
- a second transmission pulley which is secured to one end of said shaft, said second transmission pulley being adapted to engage the pulleys of the sewing machine and the main motor by means of a second transmission belt;
- a clutch disc secured to said second transmission pulley and normally urged away from said clutch member, said clutch disc being formed of a material capable of being attracted by the magnetism generated in said clutch winding upon energizing thereof whereby said clutch disc slides along the longitudinal axis of said shaft to frictionally engage said clutch member;
- a brake wheel secured at the other end of said shaft;
- a brake disc secured to said brake wheel and normally urged away from said brake wheel, said brake disc being formed of a material capable of being attracted by the magnetism generated in said brake winding upon energizing thereof whereby said brake disc slides along the longitudinal axis of said shaft to frictionally engage said brake wheel.

4,274,523
AUTOMATICALLY ENGAGEABLE JAW CLUTCH

Hans Sigg, Mutschellen, Switzerland, assignor to Maag Gear-Wheel & Machine Co. Ltd., Zurich, Switzerland

Filed Oct. 30, 1978, Ser. No. 956,040
Claims priority, application Switzerland, Nov. 10, 1977, 13705/77
Int. Cl.[3] F16D 11/10, 23/02
U.S. Cl. 192—21 5 Claims

1. An automatically engageable jaw clutch comprising:
- a toothed drive hub;
- a toothed power take-off hub;
- a clutch star axially displaceable with respect to the power take-off hub;
- a first gear tooth system provided at the clutch star for continuously connecting for conjoint rotation the clutch star with the drive hub;
- a second gear-tooth system provided for said clutch star which can be brought into engagement with the teeth of the power take-off hub by axial displacement of the clutch star;
- a screw socket;
- a pair of coarse-pitch thread means for connecting the screw socket with the power take-off hub;
- said screw socket only being conjointly axially displaceable together with the clutch star and rotatable relative thereto;
- a pawl blocking device composed of pawls and a pawl gear-tooth system;

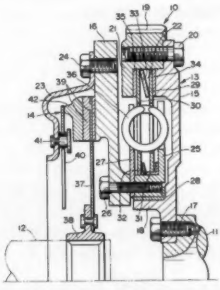


- said screw socket being entrainable by the clutch star by means of the pawl blocking device when the drive hub overtakes the power take-off hub;
- a switching device for optionally rendering ineffectual the pawls;
- said switching device comprising sleeve means axially shiftable in relation to the clutch star and having a ramp surface which in a predetermined axial position of the sleeve means in relation to the clutch star hinders the pawls from engaging in the pawl gear-tooth system.

4,274,524
ROTATIONAL TORQUE TRANSMISSION MECHANISM

Mototaka Nakane, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 3, 1979, Ser. No. 63,524
Claims priority, application Japan, Aug. 3, 1978, 53-94794
Int. Cl.[3] F16D 7/02; F16F 15/12
U.S. Cl. 192—48.3 5 Claims



1. A rotational torque transmission mechanism interposed between an input member and an output member, comprising inertia members including a first member fixed to said input member and a second member cooperating with said output member, and means interposed between said first and second members for transmitting a rotational torque of said input member to said output member therethrough, said means including dampers and a torque limiting clutch for limiting the rotational torque transmission, said dampers comprising two parallel discs mounted on said first member, two parallel driven plates fixed to said second member, and resilient ele-

ments carried on said discs and driven plates to transmit the torque from said discs to said driven plates, and said torque limiting clutch comprising a spring interposed between said two discs for urging said two discs in an axially opposite direction.

4,274,525

CLUTCH DISC

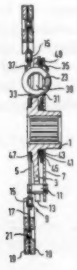
Harald Raab, Schweinfurt, and Helmuth Weissenberger, Theilheim, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,305

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906675

Int. Cl.³ F16D *3/14*

U.S. Cl. 192—106.2 **10 Claims**



1. A clutch disc comprising an axially extending hub, a flange disc projecting radially outwardly from said hub, a friction lining carrier having a clutch friction lining thereon, said carrier projecting radially outwardly from said hub, said carrier being rotatable relative to said flange disc about said hub axis for a limited axial extent, at least portions of said friction lining carrier and said flange disc being radially coextensive and said friction lining carrier and flange disc each forming stop faces spaced apart in the circumferential direction, a plurality of springs seated between said stop faces on said friction lining carrier and flange disc, and a plurality of friction discs axially resiliently clamped between said friction lining carrier and flange disc, wherein the improvement comprises that at least one contact member is located between said friction lining carrier and said flange disc and is secured to one of said friction lining carrier and said flange disc, at least one friction member secured to the other one of said friction lining carrier and said flange disc, said at least one friction member located in the circumferential path of movement of said contact member when said friction lining carrier rotates relative to said flange disc, said at least one friction member having a surface facing toward said contact member, said contact member having a surface extending in the circumferential direction relative to said hub axis and said surface extending obliquely relative to the facing surface of said at least one friction member so that as said friction lining carrier rotates relative to said flange disc said oblique surface moves in the circumferential direction into contact with the facing surface of said at least one friction member for varying the axial force applied against said at least one friction member in accordance with the extent of the relative rotational movement of said friction lining carrier relative to said flange disc.

4,274,526

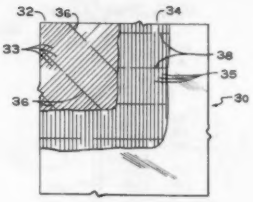
INFLATABLE STRUCTURES OF RUBBERIZED FABRIC

Gerald S. Sims, Clinton, Ohio, assignor to The B. F. Goodrich Company

Filed Jun. 25, 1979, Ser. No. 51,560

Int. Cl.³ A62B *1/20*

U.S. Cl. 193—25 B **3 Claims**



1. In an inflatable emergency device consisting essentially of structural elements forming an inflatable chamber composed of rubberized fabric sheeting, the improvement wherein at least one of said structural elements is a laminate sheet material consisting essentially of an outer and inner ply of rubberized fabric, said inner ply being disposed nearer said inflatable chamber than said outer ply, and wherein said inner ply comprises nylon fabric material with warp members thereof extending in a predetermined direction, said outer ply comprises aramid fabric material with warp members extending at an acute angle relative to said predetermined direction and the tenacity of said aramid material is substantially greater than the tenacity of said nylon material.

4,274,527

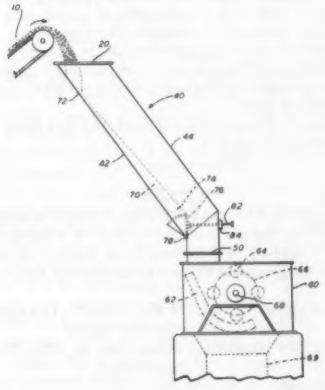
APPARATUS AND METHOD FOR UNIFORMLY SPREADING A FLOWING STREAM OF DRY SOLIDS

John H. Baker, R.D. #2, Box 109B, Port Murray, N.J. 07865

Filed Sep. 27, 1977, Ser. No. 837,206

Int. Cl.³ B65G *11/20*

U.S. Cl. 193—32 **6 Claims**

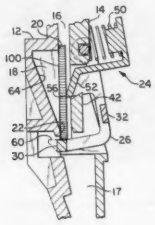


4. In a spreading device for spreading a dry solids stream as it flows down a chute, an adjustable dam having a crest which is curved transversely with respect to the direction of flow of said stream for stopping the flow of a portion of said dry solids to form a stationary mass thereof having an upper convex surface over which the flowing particles of the stream pass after the said stationary mass has formed, and means for adjusting said dam to vary the convexity of the said surface of said stationary mass for increasing or decreasing the degree of spreading of the stream flowing thereover.

4,274,528
COIN SEPARATOR ASSEMBLY

Robert N. Walters, and Kristen H. Dietz, both of Florissant, Mo., assignors to Coin Acceptors, Inc., St. Louis, Mo.

Filed Oct. 19, 1979, Ser. No. 86,682
Int. Cl.[3] G07F 3/02
U.S. Cl. 194—102 8 Claims



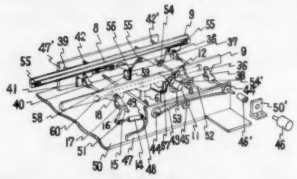
1. A coin separator assembly, comprising:
(a) a first plate,
(b) a second plate, disposed in spaced relation from said first plate to define a coin chute,
(c) one of said plate including a coin engageable abutment means,
(d) a separator member including a hinge axis, said member being mounted to one of said plates in swinging relation thereto, and said separator member including:
1. a first coin engageable means disposed in spaced relation from the hinge axis, and
2. a second coin engageable means disposed in spaced relation from the hinge axis below said first coin engageable means,
(e) biasing means tending to bias said separator member from a first position, in which a coin of one diameter range is supported against sideways movement by said abutment means on one side and said first engageable means on the other side and supported against downward movement by said second engageable means, into a second position, in which a coin of lesser diameter is tilted by said first engagement means to one of side and said second engagement means is moved away from supporting engagement with said coin of lesser diameter to permit said coin to move in a generally downward direction, and
(f) said second coin engageable means including:
1. a rail supporting said coin of one diameter range in said first position to direct said coin in a generally transverse direction, and
2. a space adjacent said rail receiving said tilted coin in said second position.

4,274,529
FEED-RETRIEVE DEVICE FOR SHEET BOARDS

Kazuhiro Mori; Yoshihiko Misawa, both of Katano; Kiyoshi Mayahara, Kadoma, and Shigeru Araki, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 861,192, Dec. 14, 1977. This application Nov. 23, 1979, Ser. No. 96,694
Claims priority, application Japan, Dec. 20, 1976, 51-153994
Int. Cl.[3] B65G 47/00
U.S. Cl. 198—339 7 Claims

1. A feed-retrieve device for sheet boards comprising:
a pair of parallel rails for holding said sheet boards in a horizontal position and guiding side edges of said sheet boards thereon in a horizontal direction,
at least one belt conveyor which runs along said rails,
a rigid table face having a processing position,
a sheet board supporting means having a supporting face, and
a means to move said rails together with said at least one belt conveyer both in said horizontal direction and in a vertical direction between a first position where said rails are apart at least in said horizontal direction from said processing position on said rigid table face to process said sheet

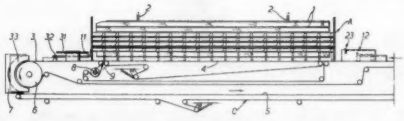


boards and a second position where said rails are close to and at a level that is flush with said supporting face of said sheet board supporting means.

4,274,530
PACKET HANDLING APPARATUS

David C. M. Carter; George C. Leigh; Barry G. Applegate; Robert J. Green, all of London, and Martin D. Morgan, Great Brickhill, Nr. Milton Keynes, all of England, assignors to Molins Limited, London, England

Filed Jul. 10, 1979, Ser. No. 56,255
Claims priority, application United Kingdom, Jul. 10, 1978, 29318/78
Int. Cl.[3] B65G 47/57, 47/31
U.S. Cl. 198—347 6 Claims



1. Packet handling apparatus including a conveyor for moving packets in line; a transfer region along the conveyor, said conveyor having separately-drivable sections respectively in said transfer region and downstream of said transfer region; a reversible accumulator arranged to receive batches of packets from or return batches to the conveyor in the transfer region; gate means at or near the exit from the transfer region; including a gate movable into an operative position to stop packets on the conveyor when it is required to transfer a batch from the conveyor to the accumulator; and means for increasing the spacing between packets on the conveyor to allow the gate to be inserted in a line of packets, said means including means for temporarily causing said downstream section of the conveyor to run faster than said upstream section.

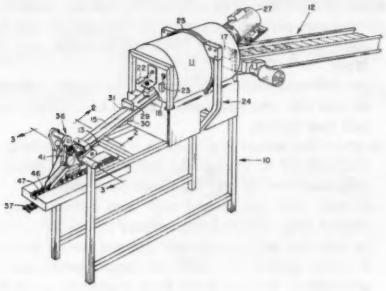
4,274,531
APPARATUS FOR ORIENTING OBLONG ARTICLES

Henry B. Whitmore, Rte. 5, Box 369, San Antonio, Tex. 78211

Filed Sep. 21, 1979, Ser. No. 77,856
Int. Cl.[3] B65G 47/24
U.S. Cl. 198—397 15 Claims

1. An article aligning device comprising:
a. a rotating drum including a feed opening and a discharge opening adapted to receive articles from an input conveyor,
b. a counter-rotating shaft conveyor projecting through said drum adapted to receive articles in said drum and move articles to,

c. a loading mechanism adapted to position individual articles on an output conveyor, and



d. feed control tilt flaps tiltably mounted in said drum and adapted to control the rate of feed of a conveyor.

4,274,532

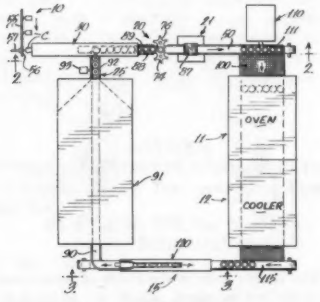
CAN HANDLING SYSTEM

Fred I. Johnson, 369 Montrose Ave., Elmhurst, Ill. 60126

Filed Jul. 26, 1979, Ser. No. 61,651

Int. Cl.³ B65G *37/00, 25/04, 47/31*

U.S. Cl. 198—429 **15 Claims**



1. A can handling system for transporting cans with an open end through an oven comprising, a plurality of free-standing can carriers each having can alignment means loosely engageable within a can to hold a can in inverted position and a base of a size to prevent contact between two cans when a pair of can carrier bases are in contact, means including a pin chain conveyor for advancing cans sequentially at uniformly spaced intervals to a loading station, means for advancing can carriers sequentially to said loading station to have the can-engaging means of the carriers at the same center-to-center distance as said cans carried by the pin chain conveyor to each receive a can thereon, and means for conveying said can carriers to and through said oven and to an unloading station where the cans are removed from the can carriers.

4,274,533

DEVICE FOR AUTOMATICALLY GUIDING AND REGULATING TRAVEL OF BOTTLES OR THE LIKE IN A CONVEYING SYSTEM

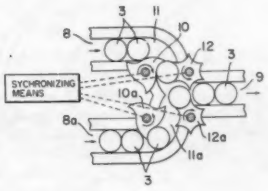
Ichiro Abe, Takasaki, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,705

Claims priority, application Japan, Jun. 15, 1978, 53/82300[U]

Int. Cl.³ B65G *29/00*

U.S. Cl. 198—450 **5 Claims**



1. A conveyor system for conveying articles of circular section, said system comprising a guide device for automatically guiding and regulating articles travelling in substantially the same direction along three substantially parallel input side straight passages into a single file travelling along an exit passage oriented substantially perpendicularly to said input side straight passages, said guide device comprising:

guide means which define a first guide passage which is arcuate and is joined at the upstream and downstream ends thereof respectively to the downstream end of the most outside one of said straight guide passages and to the upstream end of said exit passage, and second and third guide passages which are joined at their upstream ends to the corresponding input side straight passages respectively and at their downstream ends to the upstream ends of said exit passage, each of said second and third guide passages comprising an upstream arcuate passage portion and a downstream arcuate passage portion, which arcuate passage portions are joined together in tandem with inflected curvature to form a fair S-shaped guide passage;

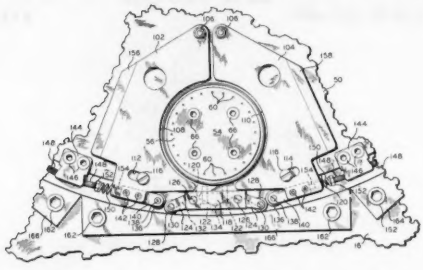
first, second and third specific starwheels concentrically disposed, respectively, relative to said first guide passage, the upstream portion of the second guide passage and the upstream portion of the third guide passage and supported rotationally in the direction generally coincident with the direction of travel of articles in the respective guide passages, and each specific starwheel having two teeth with respective tips spaced at equal angular intervals and lying in a rotational path extending partly into the respective guide passage, each tooth of each specific starwheel having a special profile shape defined by leading and trailing edges, said leading edge having a concave arcuate shape of a radius of curvature corresponding substantially to the radius of said circular cross section of the articles to be conveyed and extending from the tip inward so as to be joined with the inner end of the trailing edge of the forwardly adjacent tooth, and said trailing edge having a convex curved shape and extending outward to the tip of the rearwardly adjacent tooth, whereby said leading and trailing edges form a fair S-shaped curve adapted for establishing securely a predetermined distance between the output side adjacent articles; and

first and second timing establishing normal starwheels which are disposed at the downstream portions of said second and third guide passages respectively, said normal starwheels each having six teeth and symmetrical concave arcuate tooth surfaces the diameter of which corresponds to the cross-section of the articles to be conveyed, whereby the articles fed from said straight passages are merged and entered alternately into said exit passage.

4,274,534
CLAMPING APPARATUS FOR USE WITH A MULTI-STATION PACKAGING MACHINE OR THE LIKE

William R. Eddy, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1979, Ser. No. 55,659
Int. Cl.[3] B65G *29/00*
U.S. Cl. 198—479 7 Claims



1. Apparatus for transferring generally cylindrically shaped rings from one station to another station in a multi-station packaging machine, comprising:

a plate rotatable about an axis of rotation and having an upper surface and a plurality of ring receiving means on said upper surface each adapted for receiving one of said generally cylindrically shaped rings thereon;

a plurality of clamp means positioned respectively adjacent each of said ring receiving means and adapted for selectively alternately gripping and releasing a corresponding generally cylindrically shaped ring;

clamp actuating means positioned adjacent said plate and operatively related to said clamp means for causing each of said clamp means to grippingly engage one of said rings on one of said ring receiving means as said ring receiving means is revolved by said rotating plate from a first position adjacent a first one of said stations to a second position adjacent a second one of said stations, and, alternately, for releasing gripping engagement of one of said rings on one of said ring receiving means as said ring receiving means is revolved by said rotating plate from a third position adjacent a third one of said stations;

a pair of clamp jaws each pivotally secured to said plate intermediate a respective one of said ring receiving means and the axis of rotation of said plate, said clamp jaws being disposed on opposite sides of said ring receiving means;

bias means operatively engaging said pair of clamp jaws and adapted to continuously urge said pair of clamp jaws toward said respective ring receiving means so as to grippingly engage one of said rings positioned thereon;

cam follower means operatively related to each of said pair of clamp jaws;

cam means positioned adjacent said plate for engaging said cam follower means whereby, in response to rotation of said plate about its axis of rotation relative to said cam means, said cam follower means are revolved about said axis of rotation and engage said cam means as said ring receiving means is revolved from said third position adjacent a third one of said stations whereby each said pair of clamp jaws are cammed apart about their respective pivotal axes against the urging of the respective bias means so as to release gripping engagement with a respective one of said rings, each pair of said clamp jaws remaining in the thus cammed apart position until the respective ring receiving means is revolved to a position wherein said cam follower means disengages from said cam means whereby each pair of said clamp jaws are urged toward said respective ring receiving means under the urging of said respective bias means so as to grippingly engage another one of said rings; and

said cam follower means further includes:

a pair of rigid members each having first and second ends;

pivot means pivotally securing the first end of each of said rigid members to said plate intermediate said clamp jaws;

roller follower means journaled on the second end of each of said rigid members and adapted to rollingly engage said cam means;

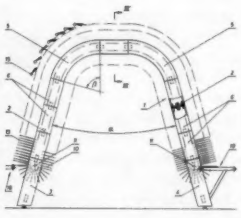
second roller means journaled on each of said clamp jaws and adapted to engage the roller follower means of a respective one of said rigid members; and

said roller follower means, said rigid members and said second roller means being adapted to operatively relate to said cam means whereby engagement of said roller follower means with said cam means causes said rigid members to revolve about their respective pivot means toward said plate and said roller follower means to thus abut the respective second roller means and revolve their respective clamp jaws about their respective pivotal securements to said plate so that each pair of clamp jaws are thereby forced apart against the urging of the respective bias means away from a respective one of said ring engaging means.

4,274,535
WAFER SHEET COOLER

Franz Haas, Sr., Gerstlgasse 25, Wien, Austria (1210); Franz Haas, Jr., Castellezgasse 32, Wien, Austria (1020), and Johann Haas, Wiener Strasse 209-215, Spillern (Nö), Austria (2104)

Filed Sep. 29, 1978, Ser. No. 946,945
Claims priority, application Austria, Oct. 6, 1977, 7126/77
Int. Cl.[3] B65G *17/12, 47/22*
U.S. Cl. 198—493 17 Claims

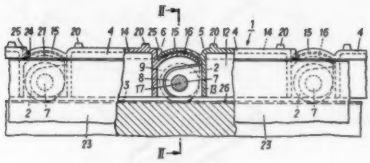


1. In a wafer sheet cooler in the frame of which two driven conveyor chains are mounted, which are adapted to be advanced in timed sequence and which carry a multiplicity of compartments, the improvement comprising: a frame; means for allowing a human attendant to readily pass through said frame, said allowing means including an arched configuration of said frame, said arched configuration defining a passageway through said frame the conveyor chains being guided parallel to the frame; two sets of chain wheels coupled with the conveyor chains, at least one of the sets of chain wheels being driven, the conveyor chains having reversal points at which their directions of travel are reversed, the reversal points being provided by the sets of chain wheels; a plurality of slide rails coupled with the frame, the conveyor chains carrying the compartments being guided on the frame over substantially the entire length of the chains by the slide rails and otherwise being guided at the reversal points by the sets of guide wheels.

4,274,536
SHIELDED ROLLER CHAIN

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 27, 1979, Ser. No. 24,304
Claims priority, application Austria, Apr. 4, 1978, 2358/78
Int. Cl.³ B65G *17/06*
U.S. Cl. 198—851 **3 Claims**



1. In a conveying arrangement of the type including a roller supporting chain having chain links movable on a runway, articulation pins provided for connecting said chain links at their ends, and projections located at the end of said chain links and overlapping each other, the improvement which is characterized in that:

a plane cover plate is provided on each one of said chain links;

load supports are provided on each plane cover plate for accommodating and conveying slabs, in particular for conveying slabs in a flame scarfing plant, said load supports rising above said projections in terms of height;

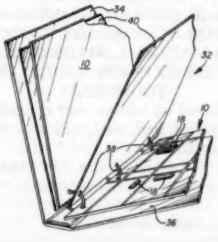
said projections are formed by an outer projection and an inner projection provided on each of said chain links, said outer projection of one chain link overlapping said inner projection of a neighboring chain link; and

side flanges are provided on said outer projections, said side flanges overlapping each inner projection in the transverse direction of said roller supporting chain, each of said side flanges, in the direction towards said runway, is provided with a straight-line limitation edge parallel to said runway, each of said side flanges, together with its straight-line limitation edge, extends over the length of said chain links from the outer projection up to the start of said inner projection arranged at the opposite end of said chain link.

4,274,537
INTEGRATED CIRCUIT STORAGE CATALOG

Jerry D. Cooper, Odessa, Tex., assignor to Cosmetex, Inc., Odessa, Tex.

Filed Sep. 24, 1979, Ser. No. 78,245
Int. Cl.³ B65D *73/02, 85/38*
U.S. Cl. 206—329 **9 Claims**



1. An integrated circuit storage catalog for storage of a plurality of integrated circuit chips, wherein each of the chips includes a body from which a plurality of electrical contacts extend in like direction, in spaced relation to one another;

said catalog comprises a sheet of bendable plastic material having a thickness greater than the length of the contacts;

means forming indicia on one face of said sheet which provides said face of said sheet with a plurality of areas;

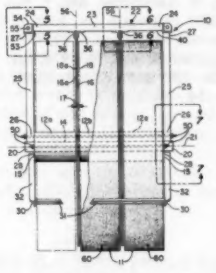
a plurality of like chips mounted within one said area, the contacts of each chip being forced into said sheet until the chip body abuts the face of the sheet, thereby releasably attaching the chip to the face of the sheet;

said indicia is also applied to each said area to indicate the characteristics of the chip stored thereon.

4,274,538
PACKAGE AND METHOD OF PACKAGING FOR FLAT ELONGATED MATERIAL

James E. McGraner, Columbus, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 19, 1979, Ser. No. 95,198
Int. Cl.³ B65D *85/671;* B65H *75/25*
U.S. Cl. 206—394 **8 Claims**



1. A package for winding, shipment, storage and individual dispensing of at least two side-by-side lengths of flat elongated sheet material comprising:

(a) two cylindrical outer shells each having a central bore extending axially therethrough, inner and outer ends, and a divider plate being rigidly joined to the inner end thereof, said divider plate extending radially outwardly beyond the circumference of said shells, said shells being positioned end-to-end, with their central bores aligned and their divider plates adjacent to and aligned with one another to form a pair of parallel plates having axially adjacent and axially most distant parallel surfaces;

(b) an elongated central member passing through the aligned central bores of said end-to-end shells, and extending axially beyond the outer ends of said end-to-end shells;

(c) a frame including an upper member extending axially and generally horizontally an amount about equal to the combined axial dimension of said end-to-end shells;

(d) a side member rigidly joined with and depending from each end of said upper member, each side member having its radially inner end rigidly joined to said central member and the outer end of the respective shell to prevent axial movement of said shells with respect to said central member;

(e) at least two tie members spaced substantially equally apart in the circumferential direction of said shells from one another and from said upper member, said tie members each having a portion spaced radially outwardly from the outer circumference of said shells and extending axially an amount about equal to the combined axial dimension of said end-to-end shells; said tie members each having a portion extending radially inwardly from each end of said axial portion and overlying part of an outer end of said end-to-end shells, each said radial portion being rigidly joined to a respective one of said axial por-

tions and a respective outer end of said end-to-end shells, and

(f) a plurality of bifurcated members whose legs extend at right angles to one another with one leg of each bifurcated member extending radially inwardly and being rigidly joined to a radially inwardly facing surface of said upper member and the other leg of each bifurcated member extending radially inwardly and being rigidly joined to one of the axially most distant surfaces of a pair of parallel plates.

4,274,539

PACKAGED SEALED-END TUBULAR THERMOPLASTIC NET BAGGING

Kenneth H. Rabeneck, 3714 Stratford La., Louisville, Ky. 40207; Jerry R. Kantlehner, Rte. 1, Box 327, and David E. Gallaher, 30001 Tattersalle La., both of Prospect, Ky. 40059

Division of Ser. No. 945,020, Sep. 22, 1978, Pat. No. 4,190,690. This application Sep. 27, 1979, Ser. No. 79,525

Int. Cl.[3] B65D *85/62, 30/06, 33/36*

U.S. Cl. 206—554 **2 Claims**

1. A packaged product, comprising:

(a) a plurality of individual one sealed end/one open end bags of tubular thermoplastic melting material arranged parallel to one another in a group, said bags being formed by repetitively angularly twisting a continuous rope-like feedstock of tubular thermoplastic net bagging material sufficiently to substantially radially condense said feedstock, melting an axially short segment of said radially condensed feedstock to form a converted feedstock containing every so often a single melted and molded massive integral seal nugget incorporating substantially all strands of said feedstock within said segment, and severing said converted feedstock beside each succeeding seal nugget to produce said individual bags in each of which said sealed end is constituted by a said seal nugget;

(b) a tubular plastic film sack sleeving said group and being permanently closed at both ends thereof for containing said group;

(c) means providing a ring of intermittent perforations through said sack intermediate the ends thereof, providing a grab-out closure, which may be grabbed and torn out to provide a corresponding grab hole permitting withdrawal of individual ones of said bags from said sack.

4,274,540

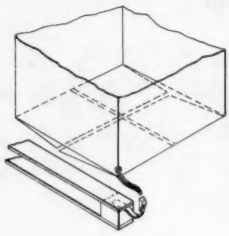
CONTAINERS AND SUPPORT COMBINATIONS

Eric R. Coles, 2 Charnwood Grove, and Rex K. Walden, 20 Forest Rd., both of Bingham, Nottinghamshire, England

Filed Oct. 4, 1977, Ser. No. 839,291

Int. Cl.[3] B65D *19/44*

U.S. Cl. 206—597 **7 Claims**



1. A pallet and container assembly comprising in combination:

a container for goods having four sides and a base, on which goods are to rest, which comprises bottom flaps folded towards one another from the four sides of the container, the folds thereby defining a lower peripheral edge around the container, four corner apertures extending through the lower peripheral edge and defined between lateral edges of each pair of next adjacent ones of said bottom flaps;

a pallet which in use spaces the container base from the ground;

a flexible strap-like tongue extending through each of said four corner apertures and comprising an enlarged head, within the container, to prevent the tongues being pulled completely through said apertures;

clips firmly secured to the pallet at points which align with said tongues when the container is positioned on the pallet, said tongues being formed so as to be interlocked with said clips and so secure the underside of the container to and pull the underside progressively more tightly against the pallet without the tongues being pulled completely through the apertures; and

said tongues being cuttable to release the container from the pallet.

4,274,541

CLOSURE SYSTEM FOR CONTAINERS, IN PARTICULAR FOR NON-RETURNABLE CONTAINERS OF SEMI-RIGID MATERIAL, MADE OUT OF AT LEAST TWO DISH-SHAPED PARTS WHICH ARE JOINED TOGETHER

Werner Festag; Hans-Ueli Müller, and Oldrich Stanek, all of Schaffhausen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 28, 1978, Ser. No. 964,123

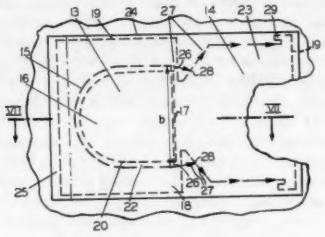
Claims priority, application Switzerland, Nov. 29, 1977, 14580/77

Int. Cl.[3] B65D *5/70*

U.S. Cl. 206—613 **15 Claims**

1. In combination, a container and a closure system therefor, said container having an opening for filling same and an adjacent tear flap for enlarging said opening, wherein said opening

is defined by a cut line and an uncut base portion and said tear flap is defined by tear lines adjacent said cut line, said tear flap



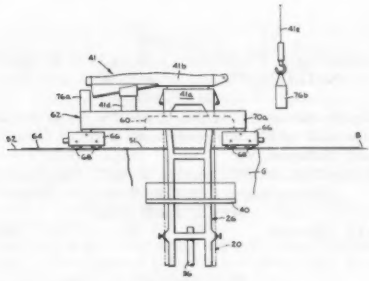
including a narrow necked down portion adjacent said base portion.

4,274,542

METHOD FOR TRANSFER OF CRANE FROM TOWER

John H. Barclay, Radnor, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 26, 1979, Ser. No. 15,273
Int. Cl.³ B66C *11/02*
U.S. Cl. 212—270 **12 Claims**



1. The method of transferring a crane from a multi-section tower formed from a plurality of interconnected sections to a site adjacent the top of the tower comprising the steps of disconnecting the crane from the uppermost section of the tower, elevating the crane above the uppermost section of the tower, assembling a structure which includes a mobile portion on the site under the elevated crane, lowering the crane onto said mobile portion of the structure, and moving the mobile portion of the structure away from the tower over the uppermost section of the tower.

4,274,543

VIAL AND CLOSURE STRUCTURE

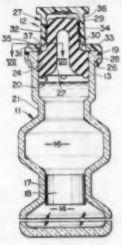
George W. Braymer, Jr., Ross Township; Kalamazoo County, MI, and Stephen H. Diaz, Los Altos, Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 23, 1978, Ser. No. 871,398
Int. Cl.³ B65D *81/32*
U.S. Cl. 215—6 **12 Claims**

1. In a two-compartment container having a constriction between the two compartments capable of receiving a removable plug which provides a liquid-tight barrier between the two compartments, said container having a neck communicating with one of said compartments and said neck having an annular rim adjacent the free end thereof, and a closure structure for the neck, the closure structure comprising:

a resiliently flexible, substantially cylindrical stopper having a first portion with an outside diameter slightly larger than the inside diameter of said neck and snugly receivable into said neck and a second portion of reduced diameter projecting beyond the free end of said neck;

resiliently flexible cap means of substantially circular cross section having a fastening portion telescopically receivable onto the free end of said neck, said fastening portion having means for gripping said rim, said fastening portion including means overlying the upper edge of the stopper first portion so as to oppose its removal from the container, and said cap means having a sleeve portion of



reduced diameter snugly but slidably receivable onto the second portion of said stopper, said sleeve portion being attached to said fastening portion by manually fracturable means, said sleeve portion being slidably receivable with the second portion of said stopper into said neck by the application of force urging said sleeve portion toward said container; and

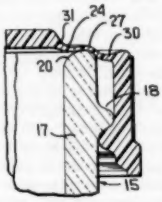
means attached to said outer end of said sleeve portion of said cap means for closing the outer end thereof.

4,274,544

SINGLE-PIECE PLASTIC CLOSURE HAVING INTEGRAL SEAL FORMING MEANS

James E. Westfall, Western Springs, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 11, 1980, Ser. No. 129,443
Int. Cl.³ B65D *53/00*
U.S. Cl. 215—344 **16 Claims**



1. A closure cap for containers of the jar and bottle type having a terminal sealing surface rounded in transverse section, said closure cap being formed in one piece of a plastics material and comprising a skirt having securing means for retaining said skirt on a container in an axially tensioned state, and an end panel, said end panel including a central panel portion of a size to be aligned with an extension of an open end of an associated container and an integral annular deformable sealing strip connecting said central panel portion to said skirt, said sealing strip being thin as compared to said skirt, said sealing strip including an intermediate portion defining an annular sealing surface radially spaced from both said skirt and said central panel portion and being axially alignable with a container terminal sealing surface, and said sealing strip having a transition portion between said intermediate sealing strip portion and said skirt, said transition portion increasing in thickness toward said skirt and forming means for effecting a drawing of

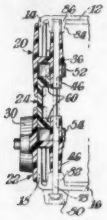
a radially outer part of said sealing surface down and around a radially outer part of a container rounded terminal sealing surface.

4,274,545

INSTRUMENT HOUSING

Peter A. Peroni, Pottstown, Pa., assignor to LaFrance Corporation, Philadelphia, Pa.

Filed Jun. 14, 1979, Ser. No. 48,591
Int. Cl.³ B65D 6/00; H05K 5/02
U.S. Cl. 220—4 R **23 Claims**



1. In an expander for forming a side wall of an electrical housing or the like having end panels fit into tracks on the inner surface of the housing wherein said expander is of generally rectangular shape with upper and lower horizontal channel sections formed by an outer wall and an inner wall spaced therefrom with a rib laterally therebetween separating said channel sections for telescopically receiving a pair of side members with one of said side members sliding downwardly into the space between said outer wall and said inner wall and the other of said side members sliding upwardly into said space between said outer wall and said inner wall, the improvement being said inner wall being of generally open construction comprising a plurality of spaced wall segments, said outer wall having an inturned flange at each of its ends thereof, said inturned flanges comprising two of said wall segments which are adapted to fit against the end panel tracks, said rib being on said outer wall projecting toward said inner wall, a generally flat plate-shaped blade mounted to said rib and extending both upwardly above and downwardly below said rib, and said blade comprising a further of said wall segments with substantial open spaces between said blade and each of said inturned flanges whereby said blade is adapted to be spaced laterally away from the end panel tracks.

21. In an electrical housing or the like having a top cover with downwardly directed flanges and a bottom cover with upwardly directed flanges and with side walls and with end panels held in tracks on the inner surface of the housing, wherein each of said side walls includes a generally rectangularly shaped expander having an outer wall spaced from an inner wall and said outer and inner walls being laterally interconnected by a rib therebetween to form a pair of upper and lower channel sections, the improvement being each of said side walls comprising a lower one of said expanders and an upper one of said expanders with a filler plate therebetween, the inner surface of said filler plate including said end panel tracks, said inner wall of each of said expanders being of generally open construction comprising a plurality of spaced wall segments, said outer wall of each of said expanders having an inturned flange at each of its ends thereof disposed adjacent said end panel tracks, said inturned flanges comprising two of said wall segments, said rib being on said outer wall projecting toward said inner wall, a generally flat plate shaped blade mounted to said rib and extending upwardly above and downwardly below said rib, said blade comprising a further of said wall segments with substantial open spaces between said blade and each of said inturned flanges with said blade spaced from said end panel tracks, said downwardly directed flanges of said top cover being telescoped into said upper channel sections of said upper expanders, said upwardly directed flanges of said bottom cover being telescoped into said lower channel sections of said lower expanders, and said filler plates being telescoped into said lower channel sections of said upper expanders and into said upper channel sections of said lower expanders.

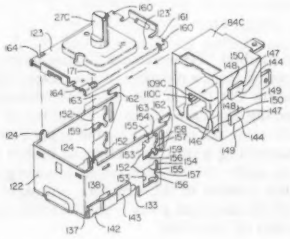
22. A filler plate for securement between an upper expander and a lower expander for forming a side wall of an electrical housing or the like wherein each expander is of generally rectangular shape with upper and lower channel sections formed by an outer wall and an inner wall spaced therefrom with a rib laterally therebetween for telescopically receiving complementary side members, said filler plate being of generally the same thickness as the spacing between said inner and outer walls of said expanders and being telescopically received between a respective set of inner and outer walls of said upper expander and said lower expander, said filler plate having an inner face and an outer face with upper and lower edges connecting said inner face and said outer face, said innner face of said filler plate having a first pair of inwardly disposed loops extending from said lower edge and a second pair of inwardly disposed loops extending from said upper edge in line with said first pair of loops for receiving longitudinal posts on the expanders, and said aligned loops of said first and said second pairs being interconnected by a stiffener.

4,274,546

CONDITION RESPONSIVE ELECTRICAL SWITCH CONSTRUCTION AND PARTS AND METHODS THEREFOR

Charles D. Branson, Greensburg, and Harvey J. Shopsky, Latrobe, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 865,594, Dec. 29, 1977, Pat. No. 4,194,102.
This application Oct. 1, 1979, Ser. No. 83,160
Int. Cl.³ B65D 6/24
U.S. Cl. 220—4 B **10 Claims**



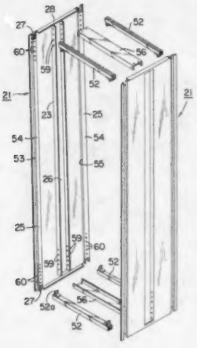
1. In a housing construction for an electrical switch construction or the like and having one housing member partially telescoped inside another housing member to have a pair of opposed ear means of said one housing member respectively project through a pair of opposed slot means in said other housing member together with a cover member secured to one of said housing members to hold the same in their assembled and telescoped relation, the improvement wherein each said slot means of said other housing member is defined in part by a pair of opposed surface means of said other housing member one of which comprises a flexible biasing section, each said ear having opposed edge means respectively pressfitted between said surface means of its respective slot means and flexing said biasing section thereof outwardly from its respective other surface means whereby said biasing sections hold one of said edge means of said ears against the other surface means of said slot means.

4,274,547

ENCLOSED SWITCHBOARD

Masatomo Takagi, Hachioji; Tsuguo Noritake, and Mitsuo Ogaki, both of Fuchu, all of Japan, assignors to Tokyo Shibaura Henki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,024
Claims priority, application Japan, Dec. 4, 1978, 53-149057
Int. Cl.[3] B65D *6/28;* A47B *55/00*
U.S. Cl. 220—4 R 7 Claims



1. In an enclosed switchboard having a pair of side plates disposed in parallel with and to confront each other and connecting members for connecting the side plates to each other to form a vertical box, the improvement wherein

each side plate comprises a substantially flat sheet provided, along both edges thereof, with vertically extending ribs having U-shaped cross-section protruding toward the confronting side plate,

the upper and the lower ends of each rib are provided with substantially U-shaped cutaway portions,

both ends of each connecting member are formed to fit in the U-shaped cutaway portions, and

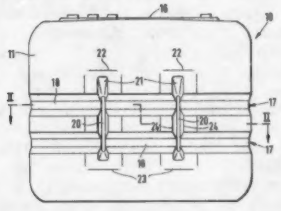
each side plate is provided with a vertically extending opening and a bent portion protruding from an edge of said opening toward the confronting side plate.

4,274,548

PLASTIC TANK, PARTICULARLY FOR THE STORAGE OF FUEL OIL AND THE LIKE

Helmhold Schneider, Kolner Strasse 59, D-5230 Altenkirchen, Fed. Rep. of Germany

Continuation of Ser. No. 793,828, May 4, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 60,254
Claims priority, application Fed. Rep. of Germany, May 4, 1976, 2619590; May 21, 1976, 2622737
Int. Cl.[3] B65D *1/44, 88/02*
U.S. Cl. 220—72 20 Claims



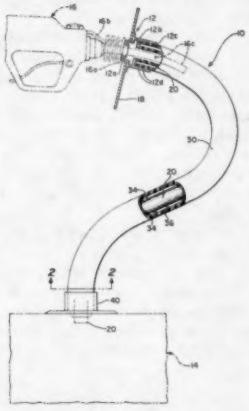
1. A blow-molded plastics storage tank comprising a substantially parallelepiped basic shape and strengthened by at least one elongated recess extending across a pair of opposed tank walls, and at least one rectilinear elongated groove extending perpendicular to the at least one recess, each groove intersecting each recess in the same wall and extending beyond the at least one recess and each groove having a base portion forming a flat web which is disposed parallel to and attached to the flat web of a corresponding groove in the opposite tank wall, whereby the said tank walls are interconnected and supported relative to one another by said webs in the interior of the tank.

4,274,549

APPARATUS FOR FUEL VAPOR RECOVERY

Lee A. Germain, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 27, 1979, Ser. No. 79,400
Int. Cl.[3] B65B *3/18*
U.S. Cl. 220—86 R 15 Claims



1. Apparatus mounted in association with an entry fueling port and a fuel tank having an inlet nipple, said apparatus providing fuel entry into the tank and recovery of fuel vapor from the tank while being serviced from a fuel dispensing nozzle having vapor recovery means and comprising:

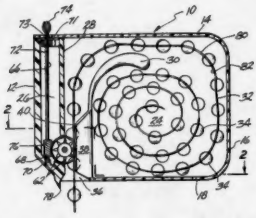
inner and outer coaxially aligned tubes, the inner tube a fuel delivery tube having a bore diameter sufficient for receiving the dispensing nozzle therein and the outer tube characterized by a plurality of longitudinal ribs formed on the inside surface of its bore such as to define a plurality of valley-pathways between the coaxially aligned tubes, said tubes connected to the entry fueling port and to the inside of the tank inlet nipple; and

baffle means mounted within the bore of the tank inlet nipple to receive fuel delivery tube in a locking engagement and provide fuel entry into the tank as dispensed from the nozzle, said baffle having a bore slightly smaller than the outside diameter of the fuel delivery tube to provide a force-fit engagement with said tube when it is inserted therethrough in the tank direction but which opposes extraction thereof in the opposite direction, and having a plurality of access ports about its periphery to provide a vapor path from the tank to the valley-pathways between the tubes and to the nozzle vapor recovery means.

4,274,550
MEDICAMENT DISPENSING DEVICE

George Feldstein, Cresskill, N.J., assignor to Myer B. Shimelman, Woodridge, Conn.

Filed May 7, 1979, Ser. No. 36,567
Int. Cl.[3] B65D *83/04;* B65H *5/28*
U.S. Cl. 221—71 7 Claims



1. A low cost throwaway medicament dispensing device characterized by structural integrity for dispensing a medicament to a user in a time controlled manner so as to discourage the taking of an overdose of the medicament by the user without interfering with the dispensing of a prescribed amount of the medicament comprising:

housing means having a medicament disposed therein, said housing means comprising a unitary integral structure characterized by integrity against access to the interior thereof;

feed means interior of said housing means for feeding said medicament from said container to said user;

guide means interior of said housing for guiding said medicament, said guide means comprising a pair of grooves for receiving said feed means as said feed means feeds said medicament;

drive means exterior of said housing means for driving said feed means; and

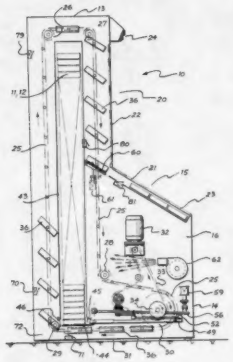
transmission means between said drive means and said feed means for feeding a lethal dose of said medicament to said user over a time frame of from about 1 to 5 minutes thereby allowing sufficient time to discourage the user from taking said lethal dose.

4,274,551
DISPENSING APPARATUS HAVING CONTINUOUSLY DRIVEN CONVEYOR

Kevin J. Hicks, 36 Northarm Rd., Middle Cove, New South Wales, Australia

Filed Jun. 14, 1978, Ser. No. 915,432
Int. Cl.[3] A47F *3/02*
U.S. Cl. 221—78 11 Claims

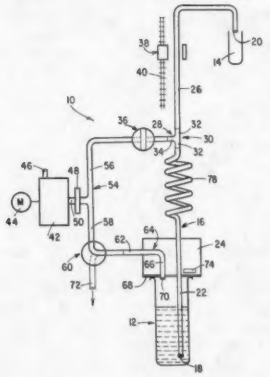
1. An article dispensing apparatus comprising a storage zone for receiving articles which are to be dispensed, a conveyor having distributed along its length holders for conveying the articles through the apparatus, means for continuously driving the conveyor past the storage zone and past a dispensing zone into which a said article can be moved from a said holder and from which the article can be removed, a loading zone at which an article from the storage zone can be loaded into a vacant said holder, first detection means for detecting whether a holder which is at any one time approaching the loading zone is vacant, loading means operable responsive to detection of a vacant holder to effect loading of an article into the vacant holder in the loading zone whilst the conveyor continues to move, second detection means for detecting the presence of a vacancy in the dispensing zone, transfer means operable responsive to detection of a vacancy within the dispensing zone to effect transfer of an article from a holder and into the dispensing zone whilst the conveyor continues to move, and means for rendering the transfer means inoperable if a vacancy is not detected in the dispensing zone by the second detection means, whereby an article which otherwise would be transferred into the dispensing zone from a holder is recycled through the apparatus.



4,274,552
LIQUID DISPENSER

Oscar Proni, Hollywood, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 26, 1979, Ser. No. 23,959
Int. Cl.[3] B67D *5/08*
U.S. Cl. 222—61 7 Claims



1. A liquid dispenser for drawing a calibrated quantity of liquid from a source container and for dispensing same at a location distant from the container, comprising a conduit having an inlet end opening adapted to be located below the level of the liquid in the container and having an outlet end opening located at said location, said conduit having an intermediate portion of known interior volume to provide determinable volumetric confinements of liquid therein, a source of fluid under pressure, first and second flow path means connecting the pressurized fluid source both to the container, and to said conduit angularly thereto at a first location along said intermediate portion thereof, respectively, means effecting a sealed coupling between the source container and the inlet end of said conduit, sensor means at a second location proximate said intermediate portion and operable to sense the leading end of said flowing liquid at the second location along said intermediate portion, first and second valve means interposed in said first and second flow path means, respectively, whereby alterna-

tively to direct pressurized fluid to the container to apply a pressure head to the liquid therein whereby to force the liquid through said inlet end along said conduit toward the outlet end thereof past the intermediate portion and to direct pressurized fluid only to said conduit at said first location along said intermediate portion effective thereby to interrupt the liquid flow therein and to drive that liquid located between the second location and the interrupted first location toward the outlet end opening of the conduit and said first and second valve means being operatively coupled to said sensing means to effect said interruption and driving.

4,274,553

SAFETY SPRAYING DEVICE

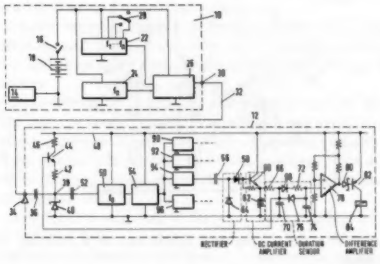
Heinz Evers, Dillenburg, and Hartmut Goedecke, Weilburg-Kubach, both of Fed. Rep. of Germany, assignors to Frank'sche Eisenwerke AG, Niederscheld, Dillkreis, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,708

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832771

Int. Cl.³ B67D *5/08*

U.S. Cl. 222—76 **13 Claims**



1. A spraying device for cleaning apparatus, plant protecting apparatus or the like, comprising a hand tool connected to a pressure and heat generator by conduit means for distributing a liquid or vaporous agent under high pressure; a switch lever adapted to be held in an on position during operation, said switch lever controlling a switch for actuating a transmitter of electric or electromagnetic waves being arranged in the hand tool, said transmitter upon actuation sending a switch-on command signal to a receiver arranged at said pressure and heat generator, said receiver including a switch for controlling said pressure and heat generator, whereby upon release of said lever such as when said hand tool is unintentionally released in the event of danger, said switch-on command signal is interrupted and said pressure and heat generator switched off, variable resistor means disposed at the input of said receiver **(50–62)** between the output of said transmitter **(22, 24, 26)** and the receiver, the resistance of said variable resistor means being varied in accordance with an output signal of an amplifier **(60, 62)** of said receiver in accordance with an input signal for determining input signal attenuation, said output signal of said amplifier being coupled to means **(68, 72, 74)** for coupling through said input signal only after a minimum duration time, and means **(78, 80, 82, 84)** for coupling said input signal to said switch for controlling said pressure and heat generator **(12)**.

4,274,554

PACKAGING OF LIQUIDS

Charles H. Malpas, P.O. Box 10, Leopold, 3221, Victoria, Australia

Filed May 30, 1978, Ser. No. 910,764

Claims priority, application Australia, Jul. 11, 1977, PD0781; Aug. 10, 1977, PD1177

Int. Cl.³ B65D *35/08*

U.S. Cl. 222—107 **4 Claims**

1. A flexible, collapsible container filled with liquid, said liquid being subject to deterioration when exposed to air, comprising a construction wherein first and second sheets of plastics ply material are sealed together around their entire peripheries, said first sheet having an aperture provided therein and a first socket member fastened thereto in registration with said aperture for filling said container with liquid, and wherein a second socket member is fastened to said container at a location to allow for dispensing of liquid contents from said container, said second socket member being fastened to one of said sheets of plastics ply material such that a portion of said one sheet extends across the innermost end of said second socket member thereby defining a frangible diaphragm, said second sheet being fused to said first sheet around the entire periphery of said aperture to isolate said first socket member and said aperture and thereby prevent escape of liquid from the interior of said container to said filling aperture, said construction minimizing the quantity of air residual in said container prior to filling and the quantity of air and other contaminants introduced into said container during filling.

4,274,555

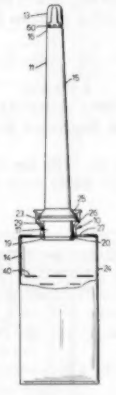
FLEXIBLE SYRINGE WITH NOZZLE CLOSURE

Vincent R. Sneider, 3422 Hallcrest Dr., Atlanta, Ga. 30319

Filed Dec. 7, 1978, Ser. No. 967,462

Int. Cl.³ A61M *1/00, 7/02*

U.S. Cl. 222—107 **8 Claims**



1. A disposable syringe having a flexible bag for containing fluid, said bag having only a single entrance that also provides a discharge exit, said syringe having an entrance portion sized and shaped to receive and retain a stem end of a hollow nozzle, the syringe and nozzle including:

(a) a hollow nozzle of at least semi-rigid material and defining a hollow spray stem having an outlet end and an inlet end;

(b) an outwardly extending ring-like portion formed inte-

grally on said nozzle, said ring-like portion spaced a selected short distance from the inlet end and substantially normal to the axis of said stem, the downward facing surface of said ring-like portion being a shoulder surface substantially normal to the axis of said stem;

(c) a plurality of discontinuous outwardly sprag-like tooth portions formed on said hollow nozzle and adjacent the inlet end of said nozzle, the upward facing surfaces of the sprag-like tooth portions having shoulder surfaces substantially normal to the axis of said stem;

(d) a syringe bag having a flexible side wall terminating with a neck portion having a passage therethrough and whose outer entrance at the outlet end is flexible and provides a washer portion sized so as to receive a spout end of a filling faucet, said neck portion and the passageway therethrough having a resilient capability to at least partially deflect and pass the sprag-like tooth portions on said nozzle, the neck portion otherwise sized to slidably retain the stem of the nozzle, the neck portion where it joins the bag providing a wall that for at least a short distance forms a shoulder surface substantially normal to the axis through the neck portion, and

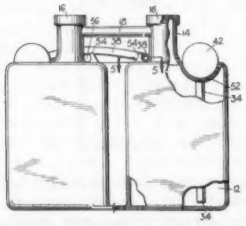
(e) a groove formed in the neck portion of the bag and inwardly of the washer portion, this groove sized and shaped to receive and retain said outwardly extending ring-like portion formed on the nozzle, the upward facing surface of the groove providing a shoulder surface substantially normal to the axis through the neck portion whereby said inlet end of the nozzle is placed in the neck of the filled syringe and is manipulated to advance the nozzle and the sprag-like tooth portions through the neck portion so that the sprag-like end portion passes through the neck whereby the upwardly formed shoulders of the sprag-like portions engage the inner shoulder surface of the bag while said outwardly extending ring-like portion enters and is seated in said groove in the neck of the syringe bag, said selected distance from the downward facing surface on the ring-like portion of the stem and the upward facing surfaces of the sprag-like tooth portions also on said stem being sufficiently less than the upward facing surface of the groove in the neck portion and the shoulder surface provided by the wall of the bag next to the neck portion insures that the nozzle stem is retained and a fluid tight, resilient connection is provided between said nozzle stem and the neck of the bag and said nozzle is prevented by the sprag portions from removal from the neck passageway.

4,274,556

DUAL DISPENSING CONTAINER

Eldon D. Thiessen, 888 Southwest River Dr., Dallas, Oreg. 97338

Filed Mar. 12, 1979, Ser. No. 19,518
Int. Cl.³ B65D *1/00, 25/38*
U.S. Cl. 222—135 **4 Claims**



1. A dual dispensing container, comprising:

(a) a one-piece housing defining a pair of laterally separated chambers for containing liquids, the housing having a top wall,

(b) a pair of hollow filler necks extending upwardly from the top wall of the housing and communicating one with each chamber,

(c) a carrying handle secured to and extending between the filler necks,

(d) a dispenser pump for each chamber, each pump including a hollow body secured to the top wall of the housing, an infeed tube extending from the body into the chamber, and an elongated flexible outfeed dispenser tube extending from the body outwardly thereof, and

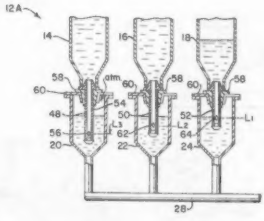
(e) a projection extending upwardly from the top wall of the housing adjacent each filler neck and forming therewith a retainer notch for frictionally retaining an intermediate portion of one of the dispenser tubes.

4,274,557

BEVERAGE DISPENSER PUMPING SYSTEM

Joseph W. Shannon, Kent, Ohio, assignor to American Beverage Control, Mogadore, Ohio

Filed Nov. 17, 1976, Ser. No. 742,693
Int. Cl.³ B67D *5/56*
U.S. Cl. 222—136 **10 Claims**



1. Apparatus for dispensing fluids out of a pouring head, comprising:

a dispensing line terminating at one end thereof at the pouring head;

pump means connected to another end of the dispensing line for forcing fluids through said line;

first valve means in said line for enabling the flow of fluid from said pump means, through said line, and out of the pouring head when open at the beginning of a dispensing cycle and prohibiting such flow when closed at the end of a dispensing cycle; and

second valve means in said line between the pouring head and said first valve means for enabling the flow of fluid through said line and out of the pouring head when said first valve means is open and allowing the fluid within said line to withdraw from the pouring head when said first valve means closes at the end of a dispensing cycle, said dispensing line being elastically expandable and contractable between said first and second valve means, said second valve means comprising:

an inlet port in communication with said line from the first valve means;

an outlet port in communication with said line to the dispensing head;

a chamber interconnecting said inlet and outlet ports; and

a sealing ball engageable with a seat at the point of interconnection of the inlet port and chamber.

4,274,558
DISPENSING OF FLUENT MATERIALS

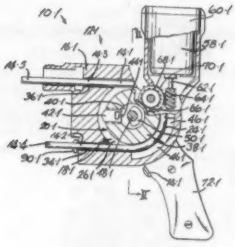
Anthony R. Clausen, 7 Klip St., Observatory, Johannesburg, Transvaal Province, South Africa

Filed Jul. 6, 1978, Ser. No. 922,270

Claims priority, application South Africa, Jul. 7, 1977, 77/4095

Int. Cl.³ B65D *37/00*

U.S. Cl. 222—214 **8 Claims**



1. A dispensing device for use in dispensing measured quantities of fluent material through a resilient, compressible dispensing tube, the device comprising:

a housing having a generally cylindrical recess therein, said recess having an open top and said recess having a base defined by a base wall, and said recess having a side defined by a peripheral wall extending from said base;

a cover for said recess including a peripheral flange extending into said recess in confronting relationship to said base wall and spaced apart therefrom;

a rotatable member having an annular section and a bearing section, said bearing section rollably engaging said housing and supporting said annular section for rotation in said recess;

the circumferential portion of said annular section projecting into the space between the confronting surface of said cover flange and said base wall and spaced radially apart from the peripheral wall to define a compression zone;

an inlet passage to said recess through said housing and said peripheral wall;

an outlet from said recess through said housing and said peripheral wall;

a compression member projecting from said annular section into said compression zone toward said housing peripheral wall; and,

adjustment means to adjust the effective length of a tube presented to the compression member in said compression zone.

4,274,559
PUMP FOR PUMPING VISCOUS MIXTURES

Camille Menier, 68 Lariviere St., St. Constant, Quebec, Canada (J0L 1X0)

Filed May 30, 1979, Ser. No. 43,660

Claims priority, application United Kingdom, May 30, 1978, 23857/78

Int. Cl.³ B67D *5/46;* **G01F** *11/02*

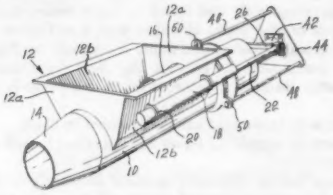
U.S. Cl. 222—217 **4 Claims**

1. A pump for pumping viscous mixtures comprising:

(a) a horizontally-disposed cylindrical casing having a discharge outlet at one end and an elongated feeding opening intermediate the ends of said casing, said feeding opening made in the top and sides of said casing, a hopper for receiving viscous mixtures disposed over and fully communicating with said feeding opening, said hopper having end walls and side walls joining with the edges of said feeding opening, said side walls diverging upwardly from a level below the longitudinal axis of said casing;

(b) a tube slidably mounted in said casing for movement towards said discharge outlet for trapping a certain quantity of viscous mixtures;

(c) a piston slidably mounted in said tube for discharging said quantity of viscous mixtures through the discharge outlet of said casing,



(d) first power means for moving said tube and exerting an advancing force on said tube at a point above the longitudinal axis of said tube; and

(e) second power means for operating said piston and exerting a force on the latter at a point co-axial with the longitudinal axis of said piston.

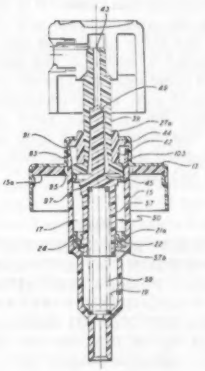
4,274,560
ATOMIZING PUMP DISPENSER

Miro S. Cater, Newtown, Conn., assignor to Emson Research Incorporated, Bridgeport, Conn.

Continuation-in-part of Ser. No. 682,059, Apr. 30, 1976, abandoned. This application Feb. 8, 1977, Ser. No. 765,701

Int. Cl.³ B05B *9/043*

U.S. Cl. 222—321 **25 Claims**



24. An improved pump for use with a container of liquid material for dispensing and atomizing the liquid material without dribble comprising:

(a) means defining a pump chamber of substantially fixed volume having an inlet, said pump chamber having an opening at the inner end thereof and being of essentially constant inner diameter;

(b) valving means disposed at said inlet for preventing a back flow from said pump chamber;

(c) a pump stem having a piston on the end thereof disposed for reciprocal motion in said pump chamber;

(d) said pump stem having a passageway therethrough with a dispensing outlet at the outer end of said passageway and an axial inlet port located inwardly thereof;

(e) a rigid valve member made of plastic having a first end portion cooperating with said axial inlet port to close off said port and a second end portion of a predetermined cross-sectional sealing area, the axial length of said second end portion of predetermined cross-sectional area being at

least equal to the range of movement of said pump stem over which dispensing occurs;

(f) a plastic annular member having a flexible sealing surface inserted in said pump chamber at the inner end thereof, forming a throat at said inner end of said chamber for guiding said second end portion, said second portion cooperating with said throat to form means sealing the bottom of said pump chamber with a surface to surface seal at said throat as said pump is operated by depressing said pump stem to prevent any flow from said pump chamber through said throat when said pump is dispensing;

(g) means to retain said annular member in place;

(h) means for supplying liquid in a container to said valving means;

(i) means biasing said valve member outwardly so that the first end portion thereof closes off said inlet port, and thereby also biasing said pump stem outwardly;

(j) means for venting said pump;

(k) an annular flange on the outward portion of said means defining a pump chamber;

(l) a mounting cup containing a least two detent portions, said flange being retained in said mounting cup by said detent portions;

(m) a collar having an annular flange extending from an intermediate point on its side wall so as to form an upper collar portion above said flange and a lower collar portion below said flange, said upper portion inserted through an opening in said mounting cup and said lower portion sealing against the top of said piston, said collar frictionally engaging said stem when said stem in in an unoperated position, with said valving means permitting communication into said pump chamber, to thereby prevent spillage of the liquid stored therein; and

(n) the cross-sectional area closed off at said inlet port being smaller than the cross-sectional area of said second end portion of said valve member at the point where it is sealingly guided, whereby, as said pump is operated by pressing said pump stem, the pressure in the pump chamber is increased until, at a predetermined pressure, said biasing is overcome and said valve member is moved away from said pump stem to open said inlet port and permit pressurized material to be discharged through said passageway and dispensing outlet.

4,274,561

DISPENSER PREFERABLY DRIVEN BY COMPRESSED-AIR FOR CONTINUOUSLY DISPENSING A SUBSTANCE FROM A CONTAINER, AND IN PARTICULAR A VISCOUS OR PASTE-LIKE MATERIAL

Morgan Andersson, OPE 2760, 831 00 Östersund, Sweden

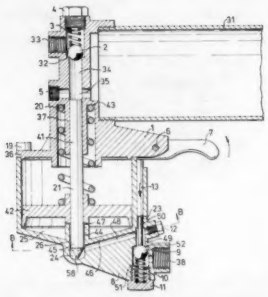
Filed Sep. 26, 1979, Ser. No. 79,223

Claims priority, application Sweden, Oct. 6, 1978, 7810482

Int. Cl.[3] G01F *11/00*

U.S. Cl. 222—334 **5 Claims**

1. A compressed-air operated dispenser for continuously dispensing a substance enclosed in a container, particularly a viscous or paste like substance, said dispenser comprising a substance outlet-passage extending from said container to an outlet; a first valve normally closing said substance outlet-passage; a piston which is moved reciprocally by compressed air and which is arranged to exert pressure on the substance in said substance-outlet passage and to open said first valve; trigger means for initiating the supply of compressed air in order to operate said piston; a second valve arranged to be moved by said piston and by an overpressure in a first chamber to a starting position, in which position a second pressure chamber on one side of the head of said piston is closed with the exception of a constriction passage around the end of said piston between said first and said second chambers for passing compressed air into said second chamber for moving the piston to a first movement end piston in which position said substance is pressurized and said first valve is opened and in which said piston ceases to act on said second valve, and an air-return passage is opened to move said second valve to a second, opposite position in which an exhaust hole for compressed air in said second chamber is opened to the atmosphere and the piston returns to a second end position, said constriction passage being so narrow that the second valve is moved to its starting position by the compressed air before the air pressure in the second chamber becomes the same as that in the first chamber upon the subsequent movement of the piston to its



first end position, said trigger means being arranged to open a third valve in the feed path for compressed air in order to supply compressed air to said first chamber which is defined by a first surface of the piston and is connected over said constriction passage to the second chamber which is defined by a second, larger surface of the piston, said second surface when pressure-actuated being arranged to move the piston in the same direction as when pressure acts on said first surface.

4,274,562

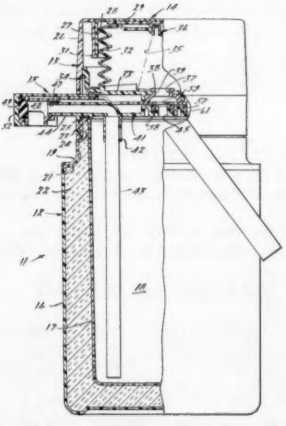
SLIDABLE VALVE FOR DISPENSING FROM AN INSULATED BOTTLE

David E. Medeiros, Jewett City, and Richard A. Tarozzi, Gales Ferry, both of Conn., assignors to King-Seeley Thermos Co., Prospect Heights, Ill.

Filed Aug. 20, 1979, Ser. No. 68,000

Int. Cl.[3] B67D *5/42*

U.S. Cl. 222—401 **9 Claims**



1. In a dispensing container having a body portion defining a cavity for containing a liquid, pump means carried on the top of said body portion, said pump means having an outlet port in communication with said cavity for generating a pressure upon the liquid therein upon operation of said pump means, dispens-

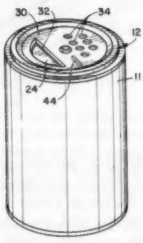
ing means extending laterally of the body portion and fixed relative thereto for delivering liquid from said cavity upon actuation of said pump means, the improvement comprising valve means movable between an opened position and a closed position, said valve means being effective to simultaneously close communication of said outlet port with said cavity and prevent liquid passage through said dispensing means when said valve means is in its closed position.

4,274,563

PLASTIC END CLOSURE FOR HERMETICALLY SEALED CONTAINER

Lewis L. Otterson, Chagrin Falls, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

Filed Jul. 30, 1979, Ser. No. 61,609
Int. Cl.³ A47G *19/24*; B65D *47/10*
U.S. Cl. 222—480 **3 Claims**



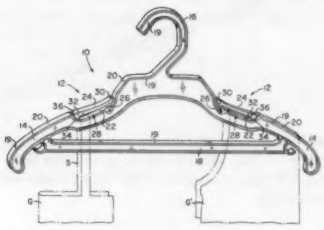
1. In a reclosable end cap closure container having a cylindrical end or neck, said closure including a plastic cap proper having a rim portion for sealing engagement with the end or neck of the container and an end wall portion generally depressed below the rim portion, said end wall portion of said cap proper including a center region and a radially intermediate region between said center region and said rim, said radially intermediate region of said end wall portion containing, within itself and to the exclusion of said center region, a tab, said tab being readily breakable by manual force exerted on the tab, in a direction toward the interior of a container on which the cap is placed, to open said tab and form a window, a rotatable disc with openings therein alignable with said tab or window, said disc being rotatably attached to the cap proper at said center region thereof with the bottom surface of said disc in sliding face-to-face contact with the top surface of the cap proper to close said window, after it is formed by opening of said tab, when said openings in said disc are turned out of alignment with said window, the improvement which comprises the cap proper constituting a hermetically sealed closure member prior to opening of said tab, an integral central upstanding boss formed on and permanently integrally associated with said end wall portion of said cap proper at said center region thereof, said disc being received on said upstanding boss and being permanently rotatively associated with said end wall portion, retainer means at the free end of the boss and slidably engaging the top side of the disc to thereby clamp the bottom surface of the boss-mounted disc in said sliding face-to-face contact with the top surface of said end wall portion, the height of the boss and retainer means being limited to avoid projection thereof above the plane of the upper extent of the rim portion, the disc being free of contact with structure radially outward of said end wall portion of the cap proper whereby the disc is retained on a hermetically sealed end closure prior to opening of the tab and remains rotatably associated with the end closure after opening of the tab to provide reclosability without gapping between said disc and said end wall portion and without springing of the disc from the end wall portion.

4,274,564

UNITARY GARMENT RETAINING HANGER

John Warmath, Brooklyn, N.Y., assignor to Cut Rate Plastic Hangers, Inc., Brooklyn, N.Y.

Filed Mar. 23, 1979, Ser. No. 22,963
Int. Cl.³ A41D *27/22*
U.S. Cl. 223—93 **13 Claims**



1. In a unitary garment hanger having at least a garment supporting shoulder, garment-retaining means on the hanger shoulder comprising:

an elongated arm disposed in and moving in the plane of the hanger shoulder,

connecting means integral with said arm and integrally connecting said arm proximate one end thereof to the hanger shoulder so as to define a free end of said arm at an end thereof opposite said connection with the hanger shoulder, said connecting means normally biasing the arm such that its free end is normally urged away from the hanger shoulder,

arcuately configured latching head means carried on the free end of said arm,

a recess defined in the hanger shoulder adjacent the elongation of said arm to define a normally open garment-receiving cavity between the hanger shoulder and said arm, said recess including a deformable keeper notch substantially arcuately conforming to the configuration of said latching head and deformable for receiving said head in positive latching engagement with said notch to close said garment-receiving cavity and thereby enable retention of a portion of a garment within said recess and for maintaining the latched engagement of said latching head in said keeper notch and against the resilient bias of said connecting means to prevent an unintended escape of said latching head from engagement with said keeper notch,

and a finger operator portion integrally carried on said one end of the arm for operating said arm in response to the application of finger pressure on said operator portion to effect pivotal disengaging movement about said connecting means in the plane of the hanger shoulder and release of said latching head from said keeper notch and thereby open said garment-receiving cavity for insertion or removal of a garment portion therewithin.

4,274,565

METHOD OF THREADING A LACING NEEDLE

Buel O. Russell, 6605 S. Hulen, Apt. 211, Fort Worth, Tex. 76133

Continuation of Ser. No. 875,376, Feb. 6, 1978, abandoned. This application Dec. 14, 1978, Ser. No. 969,405
Int. Cl.³ D05B *85/00*
U.S. Cl. 223—102 **2 Claims**

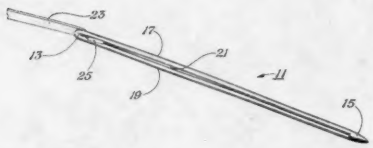
1. A method of threading a needle with lacing comprising the steps of:

providing a needle with two resilient wire portions placed parallel to each other, and secured together at both of their ends so that they are inherently biased together and form a point on one end; then

spreading the portions apart to define an eye of the needle; then

inserting the lacing transversely between the portions with an excess end of the lacing protruding past the portions; then

releasing the portions, allowing them to close against the lacing; then



drawing the lacing along the eye until it bears against an end opposite the end serving as the point; and then

trimming off the excess end of the lacing flush with the side of the needle.

4,274,566

VEHICLE DRINKING APPARATUS

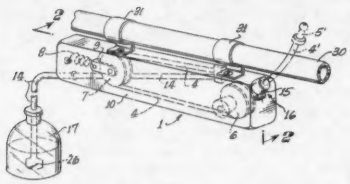
V. Lopez Rowe, 2680 Saturn Ave., Huntington Park, Calif. 90255

Filed May 14, 1979, Ser. No. 38,628

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.³ B62J *11/00*

U.S. Cl. 224—35 **4 Claims**



1. A drinking apparatus for the rider of a two-wheeled vehicle, comprising:

a container for a potable liquid and means to attach said container to said vehicle;

retracting reel means in an elongated narrow housing and means to attach said housing to said vehicle near said rider;

a flexible drinking tube with a mouthpiece and retractably retained in said reel means for convenient manual withdrawal by said rider; and

a supply tube connected non-rotatably to said drinking tube and extending into said container to provide a continuous conduit from said container to said mouthpiece,

said reel means having only two sheaves, a first sheave on a fixed shaft and a second sheave supported tor linear translation of its axis toward and away from said first sheave, and further comprising a spring means urging said second sheave away from said first sheave,

said drinking tube passing over both said sheaves and being manually pullable out from an opening in the end portion of said housing, said spring means automatically retracting said drinking tube when it is released.

4,274,567

SHOPPING CART ORGANIZER

Patricia F. Sawyer, 402 E. Royal Palm, Phoenix, Ariz. 85020

Filed Jan. 2, 1979, Ser. No. 89

Int. Cl.³ B60R *11/00*

U.S. Cl. 224—42.43 **7 Claims**

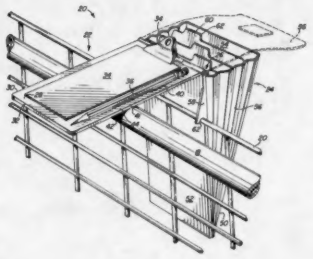
1. A shopping cart organizer securable to a conventional shopping cart of the type having transverse handle and a forwardly spaced apart frame member, said organizer comprising:

(a) a substantially rigid desk panel having a first upper surface and a second opposite generally coplanar bottom surface, said upper surface including means thereon for securement of writing materials;

(b) a receptacle having a front and rear, said receptacle being hingedly secured to said first panel means and defining a compartment therein for reception of materials;

(c) hanger means hingedly secured to said desk panel, said hanger means including hook means adapted to engage said frame member;

(d) fastener means on the bottom surface of the desk panel adapted to secure said panel to said cart handle; and



(e) having a first use position with said desk panel disposed in a generally horizontal position partially supported by said cart handle, for use as a desk and providing access to said writing materials, with said fastener means engaged about said handle and said hanger means engaging said frame member at a location adjacent the rear of said receptacle with said receptacle suspended in a generally vertical position, with the top of said receptacle substantially at the elevation of said deck panel, for providing easy access to the compartment therein and having a second folded position with the desk panel and receptacle juxtapositioned whereby the organizer may be inserted in a handbag or carried separately as a purse.

4,274,568

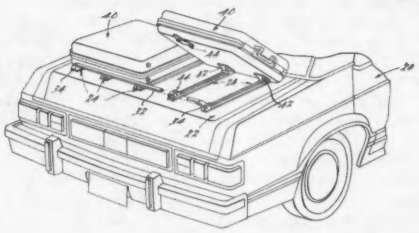
COMBINATION OF LUGGAGE CARRIER AND PERSONAL LUGGAGE

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Filed May 15, 1979, Ser. No. 39,196

Int. Cl.³ B60R *9/04, 11/00*

U.S. Cl. 224—319 **10 Claims**



1. The combination of a luggage carrier permanently mounted on a generally longitudinally extending exterior automobile body surface and a personal luggage case removably attached to said carrier, said carrier including elongated slats mounted on said body surface, said slats forming trackways with upwardly opening channels, tiedown elements adjustably disposed in said channels, attachment openings in the tiedown elements in alignment with said channels, interlocking projections fixed to the underside of said luggage case, disposed

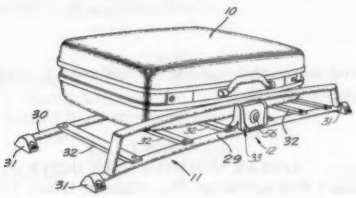
adjacent one edge thereof, and receivable in said openings upon relative movement between said slats and said luggage case to provide an interlock therebetween.

4,274,569

LUGGAGE CASE AND VEHICLE RACK THEREFOR

Roger D. Winter, Lakewood, Colo., and John P. Sarbell, Norcross, Ga., assignors to Samsonite Corporation, Denver, Colo.

Filed Sep. 14, 1979, Ser. No. 75,405
Int. Cl.³ A45F *1/16*
U.S. Cl. 224—319 **20 Claims**



1. Apparatus for releasably mounting a luggage case onto a rack, comprising:

plate means mounted onto an outer surface of the luggage case having an edge spaced from said case surface;

a rodlike member mounted on the luggage case outer surface and spaced along said surface from said plate;

an outer surface of the luggage case including an elongated groove;

the rack having a support member fittingly received within the luggage case groove, and said rack further including securing means having,

first retention means with a slot into which the plate edge is received, and

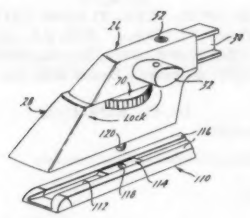
second retention means clampingly engaging the rodlike member, and said second retention means being selectively rotatable to a position releasing clamping engagement of said rodlike member.

4,274,570

LUGGAGE CARRIER ASSEMBLY

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236

Division of Ser. No. 845,846, Oct. 27, 1977, Pat. No. 4,162,755.
This application Apr. 17, 1979, Ser. No. 30,720
The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—324 **19 Claims**



1. A luggage carrier assembly for an automotive vehicle comprising

a pair of spaced parallel slat members secured to a horizontal surface of said vehicle, each said slat member defining an upwardly opening groove and each groove having a mounting member longitudinally slidable therewithin;

a pair of spaced parallel article constraining members and a pair of stanchion elements associated with each of said members, at least one of said stanchion elements having means defining a passage arranged at generally right angles to the surface of the vehicle upon which the assembly is mounted;

a fastening member disposed in part within said passage and having a lower end portion adapted for detachable engagement with said slat members;

wherein each said mounting member of said slat members includes means adapted for detachable engagement with said fastening member; and

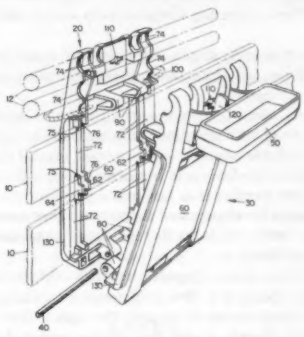
manually engageable means cooperable with the upper end of said fastening member, whereby said fastening member may be manually biased between engaged and disengaged relationship with said mounting member for selectively securing said at least one stanchion element and at least one of said article constraining members to said vehicle, and for detaching the same from said vehicle.

4,274,571

CARRIER FOR SKIS AND SKI POLES

Earl W. Lafreniere, General Knox Rd., Russell, and Douglas S. Jack, Birch Bluff Rd., Montgomery, both of Mass. 01071

Filed Mar. 4, 1980, Ser. No. 127,190
Int. Cl.³ A45C *71/00*
U.S. Cl. 294—147 **6 Claims**



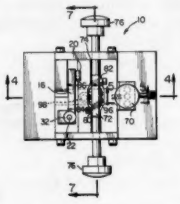
1. A device for accommodating a pair of skis and a pair of ski poles in the stored position or the transported position as mounted atop a vehicle or the transported position as hand-carried comprising in combination: identical elongated clamping members each defining four inwardly-opening recesses mutually spaced therealong, two of the recesses each adapted to receive a central portion of a ski and two of the recesses each adapted to receive a central portion of a ski pole with the skis and poles being disposed in a side-by-side relationship along a common plane and along parallel axes normal to the longitudinal axes of the clamping members; the ski recesses being of generally rectangular configuration in cross section with stepped opposite side walls defining first portions spaced a certain distance apart from each other for accommodating skis of one width and second portions spaced apart from each other a distance greater than the said certain distance for accommodating skis of another width, hinge means interconnecting the clamping members for pivotal movements between an opened position wherein the central portions of the skis and ski poles are receivable between the clamping members and a closed position wherein the inner faces of the clamping members are in confrontation for holding the skis and ski poles therebetween, latching means for releasably holding the clamping members in the closed position, and handle means carried by one of the clamping members adjacent an end thereof for carrying the device.

4,274,572

APPARATUS FOR SEVERING AN OPTICAL FIBER

William M. Dunn, Philadelphia, Pa., and Malcolm H. Hodge, Claymont, Del., assignors to TRW Inc., Philadelphia, Pa.

Filed Jan. 16, 1980, Ser. No. 112,514
Int. Cl.³ B26F *3/00*; C03B *33/06*
U.S. Cl. 225—96.5 **10 Claims**



10. An apparatus for severing an optical fiber for use in a connector assembly having a connector assembly component for clamping the optical fiber against axial displacement comprising:

a base member;

a first clamp means fixedly disposed at a first longitudinal side of said base member, said first clamp means for positioning the connector assembly component with the optical fiber projecting longitudinally across said base member;

a support member displaceably disposed in said member, and having an initial longitudinal position relative to said first clamp means;

a second clamp means spaced from and disposed in axial alignment with said first clamp means and disposed on said displaceable support member, said second clamp means operable to clamp said projecting optical fiber when said support member is in said initial position;

bias means for urging said support member away from said first clamp means to thereby apply axial tension to the optical fiber;

first scoring means disposed between said first and second clamp means at a first predetermined distance from said first clamp means for scoring the optical fiber to produce a break therein at said first predetermined distance from said first clamp means when said fiber is subjected to axial tension, and

second scoring means disposed between said first and second clamp means at a second predetermined distance from said first clamp means for scoring the optical fiber to produce a break therein at said second predetermined distance from said clamp means when said optical fiber is subjected to axial tension, said first and said second scoring means being selectively operable to score the fiber.

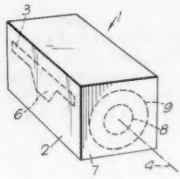
4,274,573

DISPENSER FOR WEB-LIKE MATERIAL

Oscar P. Finkelstein, 14/18 Ein Rogel St., Jerusalem, Israel

Filed Mar. 16, 1979, Ser. No. 21,315
Claims priority, application Switzerland, Mar. 7, 1979, 24446/79
Int. Cl.³ B26F *3/02*
U.S. Cl. 225—106 **9 Claims**

1. A dispenser for a coreless material wound into a hollow, cylindrical, self-supporting roll contained therein, wherein the dispenser comprises a wall portion adjacent to the circumference of the roll and two ends adjacent to the end faces of said roll, said wall portion being provided with at least one first elongated aperture means through which the material, unwindable from the outside of said cylindrical roll, can be drawn from said dispenser, and wherein at least one of the two dispenser ends adjacent to the end faces of said roll is provided with second aperture means through a central zone of which passes the roll axis, through which second aperture means the



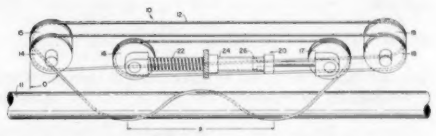
material, unwindable from the inside of said roll, can be drawn from said dispenser.

4,274,574

LINEAR MOTION CABLE DRIVE

Bernard F. Bishop, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 16, 1980, Ser. No. 112,666
Int. Cl.³ B65H *17/24*
U.S. Cl. 226—170 **10 Claims**



1. A linear cable drive means comprising:

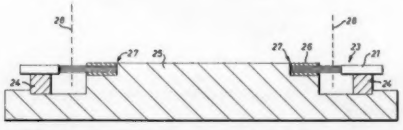
a plurality of drive assemblies cooperating to drive a cable which has a base peripheral dimension, each assembly including a drive cable helically engaged around the periphery of the driven cable, means to drive said cable in said helical path, means to rotate the cable and its drive means about the axis of the driven cable at such a rate and in a direction so as to unwrap the forward end of the drive cable to negate any rotational forces imparted to the driven cable by said helical path, and means to allow passage of a length of driven cable which has a peripheral dimension that varies from said base peripheral dimension without imparting rotational forces thereto.

4,274,575

METHOD OF MANUFACTURING BRUSH SEALS

Ralph F. J. Flower, "Littledean", Bath Rd., Devizes, England

Filed May 30, 1979, Ser. No. 43,887
Claims priority, application United Kingdom, May 31, 1978, 24737/78
Int. Cl.³ B23K *31/02*
U.S. Cl. 228—160 **14 Claims**



1. A method of manufacturing a brush seal, which method comprises the steps of:

(a) assembling a multiplicity of bristle elements in a holding tube with said bristle elements projecting from the holding

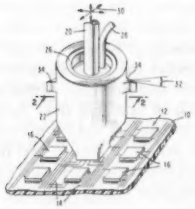
tube by a pre-set distance thereby forming a brush element;
(b) assembling a plurality of said brush elements on a carrier with said brush elements lying at pre-set angles relative to said carrier;
(c) affixing to a root member the free end portions of said bristle elements projecting from their holding tubes;
(d) severing all said bristle elements part-way between their holding tubes and said root member so that said severed bristle elements project for a predetermined distance from said root member; and
(e) removing said carrier with said holding tubes, leaving a brush seal with projecting bristles.

4,274,576

CRYOGENIC CHIP REMOVAL TECHNIQUE

Rafique S. Shariff, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,321
Int. Cl.³ B23K *28/00*
U.S. Cl. 228—264 **8 Claims**



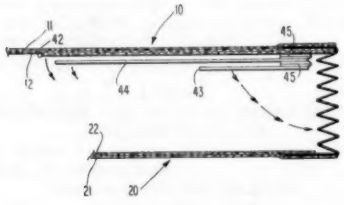
1. The method of removing a semiconductor chip attached to a ceramic substrate by a plurality of solder columns, comprising the steps of:
chilling said columns to cause embrittlement thereof,
rupturing said columns which so chilled by moving said chip relative to said substrate, and
therefter moving said chips away from said substrate.

4,274,577

EXPANSION FILING CONTAINER

Charles B. Walsh, Jr., 5 Tanglewood Cir., Wallingford, Pa. 19086

Filed May 16, 1979, Ser. No. 39,516
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—1.5 R **2 Claims**



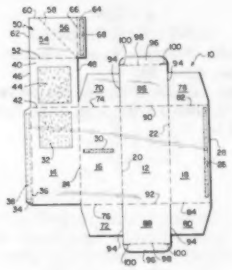
1. An expandable container comprising:
(a) a back panel;
(b) a front panel;
(c) connecting means between said back and front panels for connecting said back and front panels, said connecting means being expandable and collapsible to vary the distance between said front and back panels; and
(d) flap means comprising a plurality of pairs of foldable flap members of various widths hingedly connected to at least one of said front and back panels for spanning the distance between said front and back panels and adapted to open in sequence as said distance increases from fully closed to fully opened.

4,274,578

CARTON WITH TWO COMPARTMENTS AND BLANK FOR FORMING SAME

James Montealegre, 2045 Christensen Ave., #332, W. St. Paul, Minn. 55118

Filed Apr. 4, 1980, Ser. No. 137,238
Int. Cl.³ B65D *5/50, 5/48*
U.S. Cl. 229—27 **9 Claims**



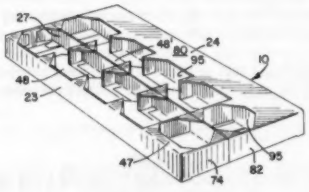
1. A carton with two compartments, comprising:
a plurality of wall panels hingedly coupled at adjacent edges thereof along fold lines; and
a collapsible divider panel hingedly coupled at an end edge thereof by a first means to an interior surface of a first of said wall panels and at a side edge thereof by a second means to an interior surface of a second of said wall panels adjacent to said first wall panel, said end and side edges of said divider panel meeting at a corner thereof, said divider panel having a fold line formed therein and extending from said divider panel corner at acute angles to said side and end edges.

4,274,579

CELLULAR TRAY-TYPE CARTON

Francis V. Kulig, Morris, Ill., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Aug. 22, 1979, Ser. No. 68,647
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—28 R **10 Claims**



1. A multi-cell carton structure in the form of a tray (10) which is formed from a cut and scored blank (12) of paperboard or similar foldable material, which carton structure comprises a tubular body with a rectangular cross section and having an abutting double row of article receiving cells of relatively shallow depth which open upwardly and which double rows of cells are in side by side relation with the tops thereof in the plane of a top wall forming panel structure (24, 37) which has a dimension lengthwise of the double row of cells substantially greater than the combined width of the rows

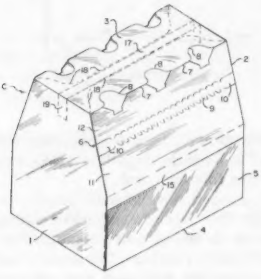
of cells, so as to provide a display panel (80) having substantial width extending along one side only of the abutting double row of cells, said cells in each of the rows thereof being formed by depressing a panel (48, 48') which is cut in the material constituting the top wall forming panel Structure (24, 37) and which is connected thereto by cross partition forming panel members (63, 63') which cross partition forming panel members (63, 63') are hinged to an upstanding position when said connected panel (48, 48') is depressed and said cross partition forming panel members (63, 63') when in said upstanding position defining one side of each of the cells in the row thereof, said rows of cells being separated only by an upstanding partition panel (94, 27) having a double thickness of material.

4,274,580

CONTAINER CARRIER

Clayton R. Arnold, Bolingbrook, Ill., assignor to Alton Box Board Company, Alton, Ill.

Filed Aug. 13, 1979, Ser. No. 66,240
Int. Cl.[3] B65D *5/02, 5/46, 5/54, 75/00*
U.S. Cl. 229—52 B **7 Claims**



1. In a side loading container carrier having a rectangular bottom wall, a pair of end walls connectible with said bottom wall, and a carrier top structure foldably secured to the end wall panels to form a tubular structure that facilitates its side loading, side walls connectible to either side of the carrier to provide closure at both sides of the tubular formed structure, adhesive means securing said side walls to the end wall panels, each side wall formed having a pair of panels, said first panel comprising a bottom panel and being secured at both its end edges with the end walls, the second panel being hinged along its length with the top structure and arranged along an incline for connection with the upper edge of the first panel, and a tear strip provided along the length of each second panel of the side walls and when removed providing an upper flap allowing its pivoting upwardly with respect to the permanent top structure for removal of contents from the carrier, and integral flanges for foldably connecting along the sides of each end wall, and the first panel and that portion of the second panel below the tear strip being permanently affixed to the proximate end wall flanges.

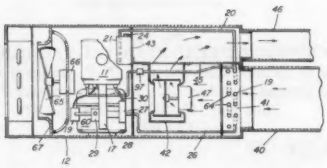
4,274,581

PACKAGE HEAT EXCHANGER SYSTEM FOR HEATING AND COOLING

Herbert G. Hays, Homestead, and Ralph W. Sweitzer, Williamsburg, both of Iowa, assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 422,397, Dec. 6, 1973, abandoned, which is a division of Ser. No. 185,631, Oct. 1, 1971, abandoned. This application Dec. 6, 1978, Ser. No. 967,180
Int. Cl.[3] F24H *3/06*
U.S. Cl. 237—7 **10 Claims**

1. A package heat exchange system control comprising:
a first heat exchanger;
means for supplying heat from the products of combustion to said first heat exchanger for supplying heat to a first fluid comprising a liquid;
conduit means connected between said first heat exchanger and a second heat exchanger for directing said fluid through said second heat exchanger;
blower means for directing air through said second heat exchanger;
blower control means responsive to the temperature of said first fluid; and



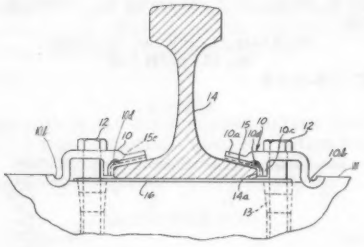
means for preventing boiling of said liquid comprising means, responsive to the temperature of said first fluid emerging from said first heat exchanger, for controlling the circulation of said first fluid through said first and second heat exchangers and for maintaining said circulation after the supply of heat to said first heat exchanger has terminated and until said temperature is reduced to a predetermined value below the boiling point of said liquid in said system.

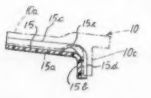
4,274,582

SEPARATE INSULATOR PAD BETWEEN A CLIP AND A RAILROAD RAIL

Graham M. Fee, Geneva, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Sep. 4, 1979, Ser. No. 71,884
Int. Cl.[3] E01B *9/30*
U.S. Cl. 238—349 **18 Claims**





1. An integral insulator pad of synthetic resin for use with a resilient clip for fastening a railroad rail to a cross support, said rail having a bottom flange to rest on said support, said flange having an upper surface sloping downwardly and outwardly at a certain angle to the flange outer end, said clip being of a

predetermined width measured lengthwise of the rail and having a length at right angles to said width extending from an inner end resting on said flange to an outer end resting on said cross support, said clip having a downwardly extending leg just outside the outer end of said flange and terminating slightly short of said cross support, there being a through opening in said clip between said leg and said clip outer end to receive a fastener bolt to enter into said support for drawing said clip against said rail flange and said support, said inner end of said clip having a lower flat surface sloping downwardly and outwardly at said certain angle lengthwise of said clip inner end for a substantial distance extending from said clip inner end to part way to said leg, resulting in a clip which has a short upward bend adjacent said downwardly extending leg of said clip, and intermediate said leg and said lower surface, characterized in that said insulator pad is of electrically insulating material and comprises a central flat portion of a width to receive the entire predetermined width of said clip, said flat portion having flat upper and lower surfaces commencing respectively adjacent the plane of said inner end of said clip and the innermost end edge of said pad to contact snugly respectively said inner end of said clip and said rail flange upper surface sloping downwardly and outwardly at said certain angle, each of said upper and lower surfaces of said flat portion being disposed in a respective single plane extending parallel to one another and to the plane of said upper surface of said rail flange, said insulator pad then having a portion along its entire width extending vertically downward and of a thickness adapted to rest snugly between said leg and said flange outer end, said flat portion of said pad having a considerably greater length as compared to the length of said downwardly extending portion of said pad resulting in a generally L-shaped configuration for said pad in side elevation, said inner end of said clip engaging said upper surface of said pad commencing immediately adjacent said innermost end edge of said pad and extending lengthwise therealong for a predetermined substantial distance, said pad commencing adjacent said innermost end edge thereof having integral upstanding shoulder portions along parallel side edges of said central flat portion of said pad at right angles to the rail direction and spaced to receive the full width of said clip between them, said upstanding shoulder portions extending toward said leg continuously along said inner end of said clip and generally past said upward bend in said clip, said shoulder portions then curving and extending down said downwardly extending portion of said insulator pad, said pad having rib means extending from said shoulder portions transverse of said pad upper surface and extending upwardly from said pad upper surface, said rib means being adapted for generally snug reception in said short bend of the clip for aiding in locating the pad relative to the clip, whereby said pad, when fastened, may be firmly held between said clip inner end and said rail flange and also held between said leg and said rail flange outer end, and said shoulder portions will prevent slippage between said pad and said clip in the longitudinal direction of said rail.

4,274,583

MOISTURE AND PRESSURE RESPONSIVE IRRIGATION SYSTEM

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

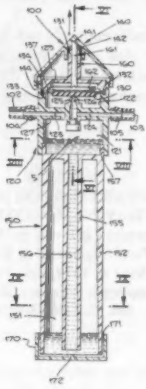
Filed Jul. 6, 1979, Ser. No. 55,182
Int. Cl.³ A01G *25/16*
U.S. Cl. 239—1 **4 Claims**

1. A method of irrigation which is responsive to moisture variations within the environment of said system and maintains water pressure within said system at or above a predetermined level by selective operation of portions of said system comprising the steps of:

placing one or more dispensing devices at spaced locations, said dispensing devices being in water supply relation with a water supply source, said supply source supplying water under pressure;

connecting a pilot valve to each said dispensing device for operation between closed and open positions; and

controlling said pilot valve by operating a device responsive



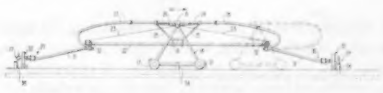
to moisture in the surrounding environment and calibrated to provide opening of said pilot valve only when the water pressure at said dispensing device is equal to or in excess of a predetermined level.

4,274,584

LAND IRRIGATION SYSTEM AND METHOD

Allen T. Noble, P.O. Box 1201, Boise, Id. 82701

Continuation-in-part of Ser. No. 887,792, Mar. 17, 1978. This application Sep. 28, 1979, Ser. No. 80,060
Int. Cl.³ A01G *25/09*; F16L *27/08*
U.S. Cl. 239—1 **51 Claims**



1. For use in connection with a land irrigation system including an elongated water main having a plurality of outlet valves located in hydrants projecting upwardly from the main at substantially equally spaced points along its length and an elongated water sprinkler line extending laterally to and movable along the length dimension of the water main, an apparatus for successively connecting the outlet valves to the sprinkler line comprising,

tractor means for moving along the length dimension of the water main at a rate substantially equal to the rate of movement of the sprinkler line,

elongated track means mounted on the tractor means and extending in the direction of movement of the tractor means,

a pair of elongated water pipe means each having an inner end,

support means mounting the inner ends of the water pipe means on the track means for limited free movement therealong, the respective water pipe means extending outwardly from the tractor means in generally opposite directions generally parallel to the direction of movement of the tractor means and each terminating in an outer end portion having coupling means thereon,

each said coupling means including means for connecting the coupling means to an outlet valve to supply water under pressure to the water pipe means associated therewith and for disconnecting the coupling means from the outlet valve,

movable conduit means connecting the inner end of each

said water pipe means with the sprinkler line to provide a water flow path therebetween,

carriage means including ground engaging wheel means supporting the outer end portion of each water pipe means, and

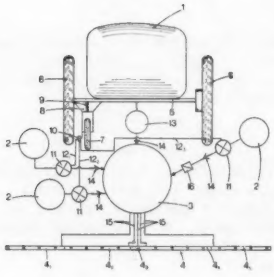
drive means for independently moving each carriage means and the water pipe means supported thereon longitudinally of the track means and of the water main to successively engage each coupling means with each outlet valve.

4,274,585

CONTROL APPARATUS FOR AGRICULTURAL SPRAYERS HAVING A MIXING CHAMBER

Maurice C. J. Lestradet, 291 rue de Marechal de Lattre de Tassigny, 51230 Fere Champeneise, France

Filed May 4, 1979, Ser. No. 35,854
Claims priority, application France, Jun. 1, 1978, 78 16420
Int. Cl.³ B05B 9/00
U.S. Cl. 239—124 **7 Claims**



1. An apparatus for automatically regulating the application of a spray solution on the basis of speed changes of a sprayer vehicle, and on the basis of the number of operating segments of a distribution bank carried by said sprayer vehicle for applying said spray solution, comprising:

a main reservoir for storage of a primary component of said spray solution;

a mixing chamber joined to said main reservoir by a connecting pipe;

a secondary reservoir for storage of a possible additional component of said spray solution,

said secondary reservoir being connected to said mixing chamber by a connecting pipe;

volume means responsive to the speed of the vehicle for effecting a first regulation of the flow of fluid from said secondary reservoir to said mixing chamber through said connecting pipe between said secondary reservoir and said mixing chamber as a function of the speed of said vehicle;

a distribution bank comprising a given plural number of independent segments;

connecting pipes respectively putting said segments in communication with said mixing chamber, and

means for effecting a second regulation of flow of fluid from said secondary reservoir to said mixing chamber, said second regulation being superimposed on said first regulation in said connecting pipe between said secondary reservoir and said mixing chamber for the purpose of regulating the flow of fluid from said secondary reservoir to said mixng chamber also as a function of the member of said segments in use;

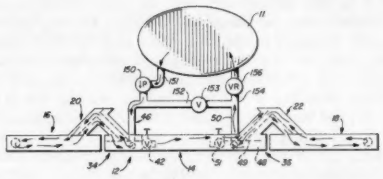
the size of said mixing chamber being considerably larger than the sectional size of said connecting pipes.

4,274,586

FLUID SPREADING APPARATUS

Francis K. Hill, P.O. Box 259, Wickenburg, Ariz. 85358

Filed Jan. 10, 1980, Ser. No. 110,810
Int. Cl.³ B05B 1/20
U.S. Cl. 239—125 **8 Claims**



1. A fluid spreading apparatus for mounting on a fluid carrying vehicle comprising:

(a) a fixed spray bar having a fluid flow passage therein and mountable transversely on the rear of the vehicle;

(b) an extender spray bar adjacent one end of said fixed spray bar and having a fluid flow passage therein;

(c) a swing jont having a stationary portion mounted on said fixed spray bar and defining an axis which extends angularly upwardly and outwardly from the one end of said fixed spray bar and having a swing portion mounted for rotation about said axis, said extender spray bar mounted on the swing portion for rotation therewith between an operating position where said extender spray bar is axially aligned with said fixed spray bar and an upright stowed position where said extender spray bar is at substantially a right angle with respect to said fixed spray bar, said swing joint having a first fluid flow passage extending therethrough which is in communication with one end of the fluid flow passage of said extender spray bar and having a second fluid flow passage extending therethrough which is in communication with the other end of the fluid flow passage of said extender spray bar;

(d) fluid direciting means on one end of said fixed spray bar and having a first chamber connectable to receive fluid under pressure from the vehicle and in communication with the first fluid flow passage of said swing joint and having a second chamber which is in communication with the second fluid flow passage of said swing joint and in communication with the fluid flow passage of said fixed spray bar; and

(e) valve means forming a fluid flow passage between the first chamber of said fluid directing means and the fluid flow passage of said fixed spray bar and optionally operable between open and closed positions.

4,274,587

WATER COOLED BURNER NOZZLE FOR SOLVENT REFINED COAL

Paul L. Cioffi, Massillon; William Downs, Alliance; William C. Kish, and William E. Newkirk, both of Akron, all of Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 22, 1979, Ser. No. 5,041
Int. Cl.³ B05B 15/00
U.S. Cl. 239—132.3 **7 Claims**

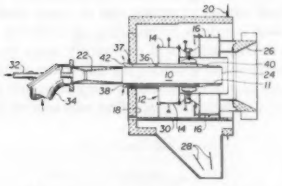
1. A fouling inhibiting burner nozzle for a solvent refined coal fuel burner comprising:

means defining a tubular chamber having a fuel inlet and a fuel outlet end, said chamber defining means being located in a burner throat;

means defining a hollow jacket isolated from said chamber along the circumference of said chamber defining means, said jacket defining means having a first port for inlet of liquid cooling fluid and a second port for outlet of liquid cooling fluid adjacent said full inlet end;

said jacket defining means comprising a thin-walled shell means defining a taper along said chamber from a first point to a second point which is at said fuel outlet end and which terminates in a sharp edge of minimal wall thickness and minimal jacket thickness around said fuel outlet end for minimizing the likelihood of eddy formation by fluids and the like flowing externally along said chamber; and

means defining a plurality of channels for the cooling fluid within said jacket defining means, said channel defining means defining a first channel having a fluid inlet and a fluid outlet, said first channel being circumferentially disposed about said chamber defining means between said first point and said second point adjacent said fuel outlet end and within said taper communicating with said first port for directing cooling fluid flow in a first direction



circumferentially about said chamber defining means, and a second channel having an inlet communicating with the first channel fluid outlet and an outlet in fluid communication with said second port, said second channel having a substantially larger cross-sectional area in the direction of flow of cooling fluid therein than said first channel and being circumferentially disposed between said first channel and said fuel inlet end about said chamber defining means for directing cooling fluid circumferentially about said chamber defining means, the fluid velocity in said first channel being substantially greater than fluid velocity in said second channel without changing the volume rate of flow in response to uniform pressure in order to maximize cooling of said nozzle adjacent said outlet end with cooling fluid in a manner sufficient to inhibit deposition of solvent refined coal residue on said chamber defining means at said edge.

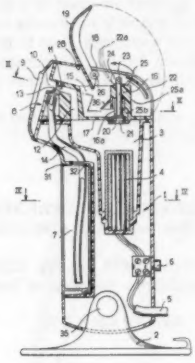
4,274,588

STEAM DISPENSER, FOR DOMESTIC USE, FOR SKIN CARE

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Aug. 27, 1979, Ser. No. 69,984
Claims priority, application France, Jul. 10, 1979, 79 17842
Int. Cl.³ B05B *1/24*
U.S. Cl. 239—138 **4 Claims**

1. A steam dispenser, for domestic use, for skin care, comprising a steam generator containing an electric heating resistance element and connected to a dispensing nozzle, a reservoir for a lotion to be mixed with steam dispensed by said nozzle, and a water feed chamber having an opening provided with a cover and separated from the steam generator by an electrically insulating wall provided with an opening closable by a valve, said valve having a steam cooperating with an articulated actuating lever which projects through the opening of the feed chamber and prevents closing of the cover when the



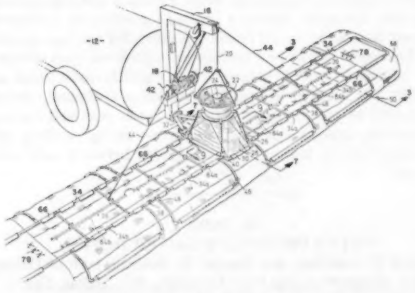
valve is opened and closes the valve automatically when the cover of the feed chamber is closed.

4,274,589

SPRAYING APPARATUS EMPLOYING A SKIRT STRUCTURE

Derek Jones, Hamilton, Canada, assignor to A.C. Sprayers Inc., Hamilton, Canada

Continuation-in-part of Ser. No. 820,110, Jul. 29, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,723
Int. Cl.³ B05B *7/00*; B60V *1/16*
U.S. Cl. 239—167 **15 Claims**



1. Spraying apparatus employing a skirt structure comprising:

a sprayer boom frame,

a bag skirt structure carried by the frame and when inflated extending downwards therefrom to have its smoothly contoured convex lowermost portion in close proximity to the ground,

the bag skirt structure forming an enclosure which is open to the ground,

means for injecting air under pressure into the bag skirt and into the skirt enclosure whereby the bag skirt is inflated and the boom and the skirt structure will be supported above the ground and can be moved over the ground,

said air bag structure comprising at least one air bag, the inner wall or walls of which comprise respectively the corresponding inside parallel leading and trailing wall parts or leading and trailing walls of the enclosure, and into which air bag or bags the air is injected under pressure and from which air passes into the enclosure,

the said air passing from the said bag skirt structure into the

enclosure via aperture means in the air bag or bags inner wall parts or walls respectively,

each such aperture means extending the full length of the respective air bag inner wall part or wall,

wherein an aperture means in the leading inner wall part or leading inner wall is disposed close to the ground, while an aperture means in the training inner wall part or trailing inner wall is disposed closely adjacent to a roof of the enclosure, and

dispensing means mounted by the boom frame to deliver spray material to the skirt enclosure.

4,274,590

APPARATUS FOR TREATING UPRIGHT SURFACES

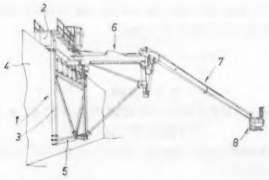
Paul Hammelmann, Zum Sundern 17, 4740 Oelde 1, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,943

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849040

Int. Cl.[3] **B05B** *3/18*

U.S. Cl. 239—185 **9 Claims**



1. Apparatus for treating upright surfaces, particularly ship hulls, comprising a carriage movable horizontally along a support; an outrigger projecting from said carriage and being tiltable relative to the carriage about a vertical and a horizontal axis, said outrigger having a free end portion; an L-shaped support connected to said free end portion and having a generally horizontal leg; a pivot bearing having a lower part immovably connected to said leg, and an upper part turnable about an upright axis relative to said lower arm; a U-shaped carrier connected to and turnable with said upper part and having transversely spaced arms; and a surface-treating working device mounted on said carrier and located between said arms thereof.

4,274,591

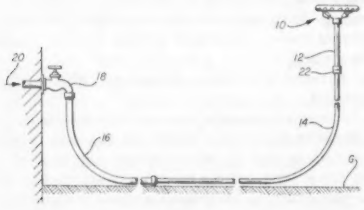
WATER PROPELLED HOVER DEVICE

Richard B. Sunshine, and Randall D. Severen, both of Dallas, Tex., assignors to The Cona Company, Inc., Dallas, Tex.

Filed Apr. 2, 1979, Ser. No. 26,285

Int. Cl.[3] **B05B** *3/00;* **A63H** *29/10*

U.S. Cl. 239—188 **9 Claims**



1. A rotatable tethered hover toy adapted for use with a grounded source of water under pressure, comprising:

a fluid supply chamber having a central longitudinal spin axis extending therethrough;

said fluid supply chamber having a bottom end with an inlet coaxial with the spin axis, and plural outlets arranged substantially symmetrically with said spin axis;

a circular rim independent of said fluid supply chamber and surrounding said fluid supply chamber;

structure rigidly connected between said fluid supply chamber and rim for generating lifting force upon rotation with said fluid supply chamber and rim about the spin axis;

a first tubing section having upper and lower ends;

a first rotary connection coupled between the upper end of said first tubing section and the inlet of said fluid supply chamber;

a second tubing section having upper and lower ends and being relatively longer than said first tubing section;

a second rotary connection coupled between the lower end of said first tubing section and the upper end of said second tubing section;

the lower end of said second tubing section being adapted for connection to the grounded water pressure source; and

a plurality of generally radially extending fluid discharge conduits each having an inner end connected to an outlet of said fluid supply chamber and an outer end, the outer ends of said conduits terminating at said rim and being oriented downwardly and outwardly such that reaction forces due to water discharging therefrom cause said rim, fluid supply chamber and connecting structure to spin and hover while tethered by said first and second tubing sections.

4,274,592

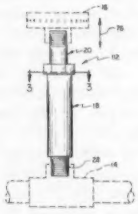
ADJUSTABLE RISER MEMBER

Daryl L. Westhusin, 4940 N. Maize Rd., Maize, Kans. 67101

Filed Nov. 5, 1979, Ser. No. 91,261

Int. Cl.[3] **B05B** *15/06*

U.S. Cl. 239—200 **2 Claims**



1. An adjustable riser member mountable between an inlet supply line and a discharge sprinkler head usable in a yard sprinkler system, comprising:

(a) a main support body assembly having a lower end connected to the inlet supply line;

(b) a riser assembly mounted in said main support body assembly and movable axially thereof to raise or lower the discharge sprinkler head;

(c) a seal assembly mounted in said main support body assembly and contacts said riser assembly to seal thereagainst and permit flowing only in said adjustable riser member to the discharge sprinkler head;

(d) said main support body assembly includes a cylindrical support body member having said lower end connected to the inlet supply line;

(e) an integral upper top head section of hexagonal shape so as to be grasped by a crescent or box end wrench for installing and holding same for adjustment purposes;

(f) said top head section having an upper stepped section to receive said seal assembly therein;

(g) a threaded support assembly mounted in said main support body assembly having threads thereon; and

(h) said threaded support assembly constructed with a semicircular body section that inserts into said main support body assembly with said threads being female threads to

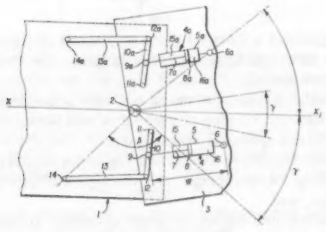
engage with said threaded section of said riser assembly to control adjustable axial movement of said riser assembly.

4,274,593

MOVABLE BLAST PIPES FOR JET ENGINES

Raymond J. M. Joubert, Savigny sur Orge, France, assignor to Societe Nationale de'Etude et de Constr. de Moteurs d'Aviation, Victor, France

Filed Sep. 27, 1979, Ser. No. 79,434
Claims priority, application France, Sep. 27, 1978, 78 28167
Int. Cl.[3] B64C *15/04*
U.S. Cl. 239—265.35 8 Claims



1. A movable blast pipe for a jet engine comprising:

a fixed element joined to the engine;

a movable element into which fluid is ejected from the fixed element, pivotably mounted at the rear of the fixed element along a pivoting axis perpendicular to the longitudinal axis of said fixed element;

means for the watertight and airtight mounting of said fixed and movable elements, one with relation to the other, comprising cooperating spherical elements;

two pairs of screw jacks for two-way guidance positioned on each side of said pivoting axis, each of said screw jacks including a body mounted and joined to the movable element and a sliding shaft; and

lever means comprising a first lever and a second interconnected lever, the first lever being connected to said fixed element and said second lever being joined at one end to the movable element at a junction point upstream from the screw jack and at the other end to said first lever wherein said sliding shaft is joined to a middle portion of said second lever.

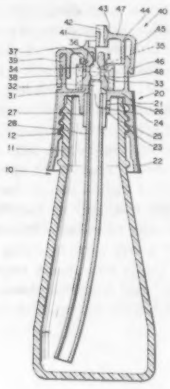
4,274,594

FOAM GENERATING AND DISPENSING DEVICE

Kazuo Ito, Kamakura, Japan, assignor to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed Dec. 6, 1977, Ser. No. 858,082
Int. Cl.[3] B65D *1/32*; B05D *7/30*; A61M *11/02*
U.S. Cl. 239—327 8 Claims

1. A squeeze-type foamed liquid dispensing device comprising a flexible container, an inner cap threaded on said container and defining a mixing chamber, a check valve chamber and an air intake port above said mixing chamber, an outer cap releasably fitted on said inner cap and defining a jet orifice in communication with said mixing chamber for receiving foamed liquid therefrom, an air discharge tube depending from said inner cap and opening directly into said mixing chamber, and



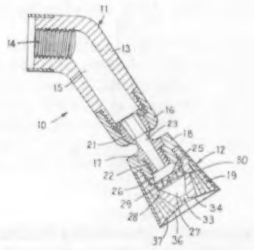
a porous foaming member attached to said inner cap and also opening directly into said mixing chamber.

4,274,595

SHOWER HEAD

Amilcar F. Yamin, Rodovia Presidente Dutra Km. 380 (trevo Bonsucesso), Guarulhos (Estado de Sao Paulo), Brazil

Filed Nov. 19, 1979, Ser. No. 95,881
Claims priority, application Brazil, Nov. 20, 1978, 7807588
Int. Cl.[3] B05B *1/34*
U.S. Cl. 239—383 2 Claims



1. Improvements in a shower head assembly which is constituted by an upper body mountable on a water supply pipe or an electric water heater, and a lower body articulately mounted on the upper body through a hollow sphere, wherein the sphere is swivably seated on the upper body and has a projecting pipelike part which is threadably engaged with and surrounded by an upper part of the lower body, the sphere and the pipelike part having a flow channel extending axially therethrough, the lower body also having a lower part which is threadably fixed to said upper part, said lower body having a cylindrical cavity defined therein, said cavity being in communication and substantially coaxially aligned with said channel, said cylindrical cavity being defined in part at one end by a lower annular seat formed on said lower part, a rotorlike element freely and rotatably positioned within said cylindrical cavity and rotatably supported on said lower seat, said rotorlike element having a plurality of inclined blades for causing the stream of water when passing therethrough to be divided into a plurality of smaller streams which are deflected in different directions and are imparted with a circumferential swirling motion, said lower part also including a frusto-conical chamber which is in direct communication with and disposed directly

below said cylindrical cavity, said frusto-conical chamber being coaxially aligned with and extending axially away from said cylindrical cavity and being of a converging funnel-like shape which terminates at a small discharge orifice located at the lower end of said lower part, said upper part also including a further frusto-conical chamber disposed directly above and in direct coaxial communication with said cylindrical cavity, said further frusto-conical chamber extending axially from the lower end of said flow channel and diverging radially outwardly with a funnel-like shape and terminating at the upper end of said cylindrical cavity, said upper part terminating at its lower end in an upper annular seat which surrounds the large-diameter end of said further frusto-conical chamber, said upper annular seat being axially spaced from but disposed opposite said lower annular seat, said rotorlike element being confined between said upper and lower parts by being confined solely within said cylindrical cavity and axially between said upper and lower annular seats, said rotorlike element being free of any fixed or structural connection to said upper and lower parts.

4,274,596

FUEL INJECTION NOZZLES

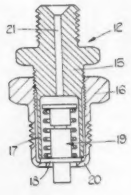
Peter Howes, 45 Birchdale, Gerrards Cross, Buckinghamshire, England

Filed Sep. 28, 1979, Ser. No. 80,162

Claims priority, application United Kingdom, Nov. 17, 1978, 45088/78

Int. Cl.³ F02M *61/20*

U.S. Cl. 239—533.9 **6 Claims**



1. A fuel injection nozzle for supplying fuel to a compression ignition engine comprising a hollow body part, a valve assembly including a resiliently loaded valve member and a seating, the valve assembly being located within the body part with a valve head forming part of the assembly being exposed at or beyond one end of the body part, and a fuel inlet communicating with the interior of the body part, the arrangement being such that in use, when fuel under pressure is supplied to the inlet, the fuel pressure within the body part acting upon the components of the valve assembly will effect movement of the valve head away from the body and the seating to permit fuel to flow past the valve head and seating into in use, the respective combustion chamber of the associated engine, the nozzle being characterized by an annular elongated part located within the body part, said elongated part surrounding the portion of the valve assembly lying within the body part, said elongated part acting to define part of the wall of a chamber to which fuel under pressure is supplied from the inlet and from which fuel flows when the head is moved out of contact with the seating, the wall thickness of said elongated part being such that the wall deflects outwardly during the initial delivery of fuel tc the nozzle thereby to store part of the initial flow of fuel whereby the initial rate of flow of fuel past the valve head and seating will be at a reduced rate.

4,274,597

WATERING HEAD

Alajos Dobos; Gyula Kiss; Julia Jony nee Acs; Laszlo Sasdi, and Vilma Bisits nee Zsilinszky, all of Budapest, Hungary, assignors to Agrober Mezögazdasagi es Elelmiszeripari Tervezö, Beruhazasivallalat, Budapest, Hungary

Filed Oct. 17, 1979, Ser. No. 85,797

Claims priority, application Hungary, Nov. 15, 1978, B 901

Int. Cl.³ B05B *1/02*

U.S. Cl. 239—542 **4 Claims**

1. A drop-feed irrigating head adapted to be connected to a pipe, comprising:

a tubular fitting penetrating said pipe and affixed thereto;

a cylindrical housing connected to said fitting and having a free end spaced from said pipe;

a receiving sleeve in said housing communicating with said fitting for receiving water through said fitting from said pipe; and

a braking duct connected at one extremity to said sleeve and disposed in said housing while terminating at said end of said housing in a water-discharge orifice, said duct having a polygonal helical configuration of a plurality of turns with each turn consisting of a plurality of straight branches successively connected to one another at angular vertices lying along a helix within said housing.

4,274,598

ELECTROMAGNETIC FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES

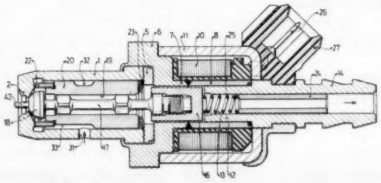
Thomas Wilfert, Markgfönigen; Rudolf Babitzka, Kirchberg, and Walter Schlagmüller, Schwiebergingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,535

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2807052

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—585 **1 Claim**



1. An electromagnetic fuel injection valve for internal combustion engines, in particular vehicle engines with intake manifold injection comprising

a housing having a valve seat and an injection port downstream of said valve seat,

a spin chamber located immediately upstream of said valve seat into which chamber the fuel enters in a swirl path via at least one inflow bore,

an annular body defining an annular chamber encompassing said spin chamber,

a plurality of bores in said annular body for introducing fuel tangentially and upstream into said spin chamber,

each of said plurality of bores having a calibrated diameter to provide a throttle point for metering the introduction of fuel into said spin chamber,

said spin chamber having a return flow bore for fuel flow therethrough with the return flow bore connected with a return line to a pressure-generating supply pump,

said valve including a closing body having a projection extending into said injection port and extending outwardly beyond the housing, said projection having a diameter of a dimension that the fuel undergoes no further throttling in the injection port and the apportionment function of the calibrated bores is not restricted,

said closing body also including an auxiliary valve in said return flow bore which extends from said spin chamber to said pressure-generating supply pump,

said auxiliary valve arranged to monitor said injection port and close said return flow bore when the valve needle of said closing body opens said injection port, and vice versa.

4,274,599

ORE GRINDING PROCESS INCLUDING A GRINDING AID OF AN ANIONIC POLYELECTROLYTE

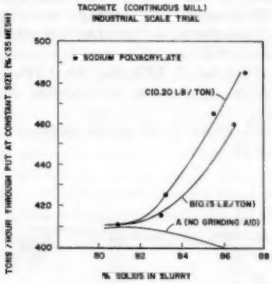
Willy Manfroy, Carmel, Ind., and Richard R. Klimpel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 853,737, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 805,252, Jun. 10, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,871

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ B02C *23/18*

U.S. Cl. 241—16 **21 Claims**



1. A process for grinding coal or ores containing metal values comprising carrying out said grinding in the presence of a liquid medium and a grinding aid comprising an anionic polyelectrolyte dispersible in said medium and having a polyethylenic backbone and a plurality of pendant anionic groups, said grinding aid being employed in an amount effective to provide increased grinding efficiency.

4,274,600

METHOD OF AND A GRINDER FOR GRINDING WOOD UNDER PRESSURE

Pekka O. Haikkala, Tampere, Finland, assignor to OY. Tampella AB, Tampere, Finland

Filed Jan. 24, 1979, Ser. No. 6,156

Claims priority, application Finland, Feb. 16, 1978, 780514

Int. Cl.³ B02C *23/24*

U.S. Cl. 241—18 **3 Claims**

1. A method of grinding wood under pressurized conditions in a gas-filled grinding chamber, comprising the steps of

(a) feeding a batch of wood to be ground into a feeding chamber by way of an input opening thereof, said feeding chamber having an output opening which leads into said grinding chamber and is closed in pressure-tight manner;

(b) closing the input opening of the feeding chamber in pressure-tight manner;

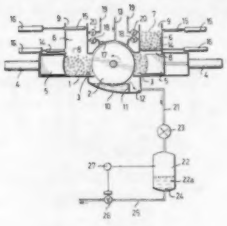
(c) opening the output opening of the feeding chamber;

(d) passing said batch of wood from the feeding chamber into the grinding chamber by way of said output opening;

(e) closing said output opening in pressure-tight manner;

(f) substantially continuously grinding said batch of wood under pressurized conditions in the grinding chamber to form a primary groundwood stock and, while so doing, opening said input opening, repeating steps (a) and (b) and discharging primary groundwood stock from the grinding chamber;

(g) repeating steps (c), (d) and (e) while discharging primary groundwood stock from the grinding chamber;



(h) repeating step (f);

(i) passing the primary groundwood stock discharged from the grinding chamber to a stick crusher while maintaining the stock under superatmospheric pressure;

(j) employing the stick crusher to crush sticks present in the primary groundwood stock, while maintaining the stock under superatmospheric pressure, thereby to produce a secondary groundwood stock under superatmospheric pressure;

(k) passing the secondary groundwood stock to a valve having an outlet to atmospheric pressure while maintaining the stock under superatmospheric pressure; and

(l) continuously discharging secondary groundwood stock to atmospheric pressure through the valve outlet while preserving a hydraulic seal of secondary groundwood stock upstream of said valve.

4,274,601

IMP MILL HAVING ADJUSTMENT MEANS

Richard L. Musto, Homewood, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jul. 23, 1979, Ser. No. 59,704

Int. Cl.³ B02C *13/286, 13/288*

U.S. Cl. 241—186.2 **6 Claims**

1. An apparatus that is particularly suited for the fine and medium-fine grinding of softer nonmetallic minerals and coals, and which is capable of selectively being operated as either a fine grinder or a coarse grinder, comprising:

a. a housing having a grinding chamber formed therewithin, a first opening communicating with said grinding chamber and operable as an inlet thereto, and a second opening communicating with said grinding chamber and operable as an outlet therefrom;

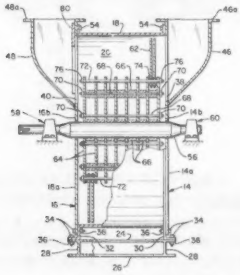
b. inlet means having one end thereof connected in fluid flow relation with said first opening and having the other end thereof connectable to a source of grindable material, said inlet means being operative to provide grindable material from the supply thereof to said grinding chamber;

c. grinding means supported within said grinding chamber, said grinding means operative to effect the grinding of the grindable material disposed within said grinding chamber;

d. outlet means comprising an outlet duct having first and

second ends, said first end being joined to said housing in juxtaposed relation to said second opening for receiving ground material from said grinding chamber after the grinding thereof therewithin, said second end terminating in a flange capable of being connected to a receiver of ground material; and

e. adjustment means cooperatively associated with said outlet means, said adjustment means including a plate-like baffle member and mounting means mounting said plate-like baffle member in said outlet duct in juxtaposed relation to said second opening such that said plate-like baffle member is slidably movable in a plane parallel to the plane defined by the diameter of said second opening, said plate-like baffle member having an arcuate edge embodying a radius of curvature corresponding to the radius curvature of said second opening, said mounting means including a pair of spaced slots formed in said outlet duct adjacent to said first end thereof and a pair of fasteners fixedly attached to said plate-like baffle member, said pair of fasteners being received in said pair of spaced slots for sliding movement therewithin, said pair of fasteners when positioned at a first location within said pair of spaced slots being operative to position said plate-like baffle member relative to said second opening such that said arcuate edge of said plate-like baffle member projects into said second opening thereby defining an abutment relative thereto operative to impede the flow of material through said second opening from said grinding chamber and thereby causing the apparatus to operate as a fine grinder, said pair of fasteners when positioned at a second location within said pair of spaced slots being operative to position said plate-like baffle member relative to said second opening such that said arcuate edge of said plate-like baffle member is coterminous with the periphery of said second opening thereby enabling material to freely flow through said second opening from said grinding chamber and thereby causing the apparatus to operate as a coarse grinder.



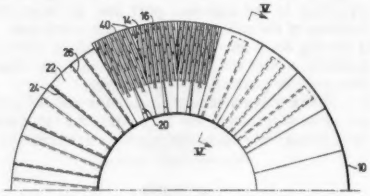
4,274,602
ROTARY GRINDING DISC FOR DEFIBRATING APPARATUS

Johan G. I. Johansson, Taby, Sweden, assignor to Defibrator Aktiebolag, Stockholm, Sweden

Filed Feb. 28, 1979, Ser. No. 16,320
Claims priority, application Sweden, Mar. 3, 1978, 7802471
Int. Cl.³ B02C *7/12*
U.S. Cl. 241—298 **2 Claims**

1. In a defibrating apparatus in which fibrous puip material, such as wood chips, is ground in an interspace defined between two opposed relatively rotating discs (**10**) having a central opening for introducing the material into a central feed-in zone and supporting a plurality of arcuate grinding plate segments disposed annularly about the rotating disc and extending radially inwardly from the periphery to said feed-in zone, said grinding plate segments having a radially outer peripheral grinding section (12) having a grinding surface comprising ribs (**14**) and ridges (**16**) and a radially inner section (**19**) for conveying the material from said central feed-in zone into said grinding section, the improvement providing relatively thin and relatively light segment plates comprising:

(a) dovetail-shaped grooves (**22, 28**) in said disc (**10**) defined between converging side walls (**24, 26**) and extending with progressively decreasing width from an outer peripheral portion of said disc (**10**) towards a radially inner portion thereof;



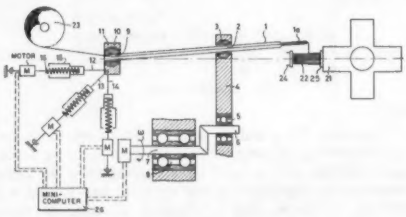
(b) tongues (**34, 35**) projecting from the surface opposite said grinding surface on said grinding plate segments and having a wedge profile corresponding to said dovetail-shaped grooves (**22, 28**) for wedging said grinding plate segment in dovetail fashion into said disc (**10**); and

(c) a removable ring member (**36**) surrounding the periphery of said disc (**10**) and engaging said tongues (**34, 35**) to secure the latter in their wedged dovetailed location in said grooves during the rotation of the disc.

4,274,603
MACHINE FOR WINDING WIRE COILS

Wilhelmus L. L. Lenders, and Martinus J. van Hirtum, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,118
Claims priority, application Netherlands, Jan. 6, 1978, 7800156
Int. Cl.³ H01F *41/00, 41/04;* **B65H** *57/28*
U.S. Cl. 242—7.14 **12 Claims**



1. A machine for winding a wire coil, comprising a spool holder for stationarily supporting a spool on which the coil is to be wound, a wire supply, a wire guide for guiding a wire from the wire supply onto a spool supported by the holder, means for mounting the wire guide so that it is movable around the spool and is capable of traversing the spool in a direction parallel the axis thereof, the wire guide comprising a tubular winding finger having an end portion for delivering the wire to the spool, said mounting means comprising, means for supporting the tubular winding finger at a first point spaced from said end portion in a bearing which is capable of performing an orbital movement about an axis which coincides with the axis of the spool supported by the holder, the path of said orbital movement lying in a plane which extends transversely of said axis, and means pivotally coupling the winding finger to three

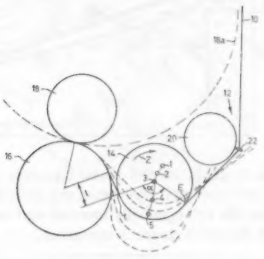
actuating elements at a second point which is spaced further from said end portion of the winding finger than the first point, said three actuating elements being displaceable in different directions by associated controllable drive devices such that the pivotal coupling is displaceable in any direction by the combined operation of the actuating elements.

4,274,604

WINDING MACHINE

Walter Vetterli, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,047
Int. Cl.[3] B65H *54/28, 59/00*
U.S. Cl. 242—43 R 14 Claims



7. A winding machine for winding a filament into a package, comprising

first means for receiving and rotating a bobbin to wind a filament onto the bobbin, and

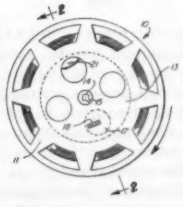
tension control means adapted to be contacted by the filament with sliding friction therebetween prior to the filament reaching said first means, said tension control means including a grooved roller for contacting the filament at the end of a package and means for adjusting the position of said roller to vary the wrap angle of the filament around said roller thereby varying the contact length of the filament with said roller to adjust the filament tension downstream of said tension control means while maintaining a drag length between a point where a filament leaves said grooved roller and a point where the filament engages said first means near constant for all positions of said grooved roller.

4,274,605

REEL TECHNOLOGY

George P. Gruber, Jr., 14930 - 130th St. N., Stillwater, Minn. 55082

Filed Jan. 24, 1980, Ser. No. 114,740
Int. Cl.[3] B65H *75/00*
U.S. Cl. 242—55 15 Claims



1. A use-registering reel for flexible tape, said reel having a pair of lateral disk-like members in spaced parallel relationship and an axially centered core structure to which said disk-like members are united, said core structure comprising

(a) an axial hub for fixing said reel on a horizontal reel-support shaft of a tape processing machine,

(b) a cylindrical tape-support member at the radially outer perimeter of said core structure, said tape-support member being between said disk-like members and coaxially about said hub but spaced radially outward therefrom,

(c) wall means forming a housing within a radial segment of said core structure, whereby said housing is eccentric to the axis of said hub and undergoes orbital movement about said axis during rotation of said reel, said wall means including a transparent window at a lateral side of said reel, said housing being united to said core structure, and

(d) a counter assembly mounted in tamper-resistant condition in said housing for orbital movement therewith during rotation of said reel, said counter assembly including

(i) actuatable indicating means for registering revolutions of said reel, said indicating means being viewable through said window of said housing at least during one predetermined direction of rotation of said reel,

(ii) action means for actuating said indicating means responsively to rotation of said reel, and

(iii) selective means responsive solely to the direction of rotation of said reel, said selective means being inoperative to disable said action means during rotation of said reel in said one predetermined direction and operative to disable said action means when said reel is rotated in the opposite direction, whereby said counter effectively registers revolutions of said reel in said one predetermined direction only.

4,274,606

SELF-TAILING WINCH

Hans Bernwall, 133 Granada Dr., Corte Madera, Calif. 94925; Lars Lundberg, Box 28, 45071 Fjällbacka, Sweden, and Carl Seipel, 44 Laurel Grove Ave., Kentfield, Calif. 94904

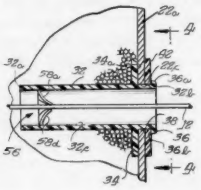
Filed Aug. 30, 1979, Ser. No. 71,268
Int. Cl.[3] B65H *75/18*
U.S. Cl. 242—117 13 Claims

1. In a winch for the retrieval of rope on a sailboat having a spool rotatable about the axis of the winch wherein said spool has a base, drum and flange and wherein said drum is configured to be narrower than said base and flange and is capable of accepting multiple turns of said rope for rectrieval, the improvement comprising means for increasing the coefficient of friction on the surface of said spool only in an area substantially at the intersection of said drum and flange wherein only the last turn of said rope around the winch would contact the area of increased friction.

4,274,607
GUIDE DEVICE FOR USE IN ELONGATE FILAMENT DISPENSING PACKAGE AND THE LIKE

James D. Priest, New Paris, Ohio, assignor to Belden Corporation, Geneva, Ill.

Filed Dec. 3, 1979, Ser. No. 99,464
Int. Cl.[3] B65H 55/02
U.S. Cl. 242—163 12 Claims



1. A device for guiding an elongate filament from a coil of said filament, comprising a tubular guide sleeve having first and second ends, a radially disposed retainer formed on said sleeve adjacent one of said ends, said retainer having an outer peripheral surface tapered inwardly toward said one end of said sleeve and defining a substantially planar stop surface spaced a predetermined longitudinal distance from said one end of said sleeve, a radial annular flange formed on said sleeve in predetermined longitudinally spaced relation from said stop surface on said retainer and defining with said retainer a locking recess therebetween, said retainer being of lesser radial extent than said flange so as to enable insertion of said one of said ends and said retainer through an opening of predetermined diameter in a panel member with said flange abutting the side of the panel from which said retainer is inserted, a locking member adapted for releasable cooperation with said locking recess and said retainer to maintain said sleeve in mounted relation on said panel member when said one of said ends is inserted through said opening in said panel member, and restraint means comprising a plurality of generally radially inwardly directed fingers disposed internally of said tubular sleeve and extending about substantially the full periphery of the inner surface of said sleeve, said fingers being spaced longitudinally from said retainer and flange toward the other end of said sleeve and having sufficient flexibility to enable insertion of an elongate filament generally centrally therebetween in a predetermined direction while maintaining frictional engagement with the peripheral surface of the elongate filament so as to substantially restrain movement of the filament in a direction reverse to said predetermined direction.

4,274,608
TAPE TRANSPORT

Paul A. Gilovich, Saratoga, and Thomas A. Hickox, San Jose, both of Calif., assignors to Microcomputer Systems Corp., Sunnyvale, Calif.

Filed Jun. 4, 1979, Ser. No. 45,429
Int. Cl.[3] G03B 1/04; G11B 15/32
U.S. Cl. 242—192 4 Claims

1. A tape transport for presenting tape to a rotating drum comprising:

a take-up reel including a hub,

a drive pulley,

at least three spaced guide rollers,

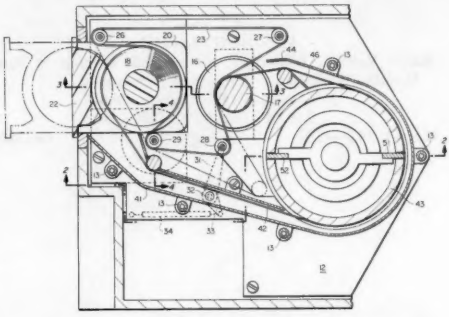
a drive belt extending over spaced guide rollers and said drive pulley,

spring-loaded means for mounting one of said spaced guide rollers adjacent one side of said take-up reel to move the roller in a direction to tension said belt,

means for mounting another one of said spaced guide rollers on the other side of said take-up reel whereby the tensioned tape rides on said hub,

means for receiving a tape supply roll to bring the roll into engagement with said belt whereby said belt is engaged and the roller is moved to accommodate the tape supply roll with the belt in engagement with the surface of said roll,

a drive means for driving said drive pulley to drive the belt whereby to feed the tape from the tape supply roll over the tape drum and onto the hub under the belt,

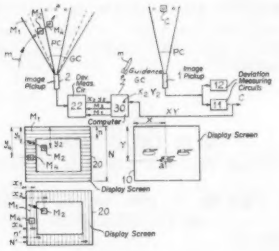


and means to guide the end of said tape as it travels from the supply roll over said tape drum and onto the take-up reel hub after the roll is initially inserted into said tape apparatus and the drive means is energized.

4,274,609
TARGET AND MISSILE ANGLE TRACKING METHOD AND SYSTEM FOR GUIDING MISSILES ON TO TARGETS

Noël H. L. Ferrier, Montmorency, and Dominique C. N. E. M. de Ruffi de Ponteves, Versailles, both of France, assignors to Societe d'Etudes et de Realisations Electroniques and Societe de Fabrication d'Instruments de Mesure (SFIM), both of, France

Filed Apr. 26, 1978, Ser. No. 900,331
Claims priority, application France, May 6, 1977, 77 13911
Int. Cl.[3] F41G 7/28
U.S. Cl. 244—3.14 26 Claims



1. A method of guiding passive missiles fired from a helicopter in particular at multiple targets, comprising the steps of observing and locating each of the targets and the missiles by image forming optronic pick-ups, transmitting their information in the form of electric signals, launching several missiles successively and guiding them simultaneously to their respective targets by electronically determining the angular coordinates of a target after selection and pursuit of the corresponding image formed by a pick-up, and by guidance of each missile toward the target according to the differences between the angular coordinates of the target and the angular coordinates of the missile, which coordinates are determined in a first phase with a large field and in a second phase in a small field of vision

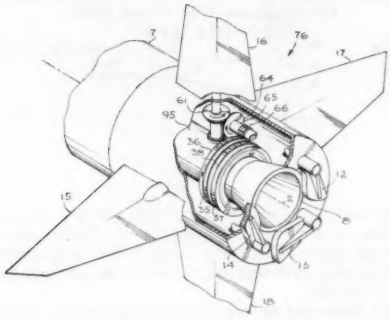
after selection and pursuit of the corresponding image received by said pick-ups.

4,274,610

JET TAB CONTROL MECHANISM FOR THRUST VECTOR CONTROL

Thomas W. Bastian, Fullerton, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 14, 1978, Ser. No. 924,595
Int. Cl.³ F42B *15/18*
U.S. Cl. 244—3.22 **9 Claims**



1. A thrust vector control system for a missile comprising:
a cylindrical missile body;
rocket propulsion means acting along the axis of the body to propel the missile;
a plurality of fins pivotably mounted external to the body, each being pivotable about an axis normal to the cylindrical surface of the missile body for aerodynamically controlling direction of the missile in flight;
a servo motor associated with each fin for controlling the angular position of the fin relative to the missile body;
control circuitry for commanding the servo motors to control the pivoting of the fins;
a plurality of thrust vector control jet tabs effective to provide pitch and yaw moments by deflecting rocket exhaust gas;
a coupler effective to transmit fin servo motor commands to the thrust vector control jet tabs; and
actuator means coupled to said coupler and the tabs and containing means to rotate the thrust vector control jet tabs in response to pitch or yaw servo motor commands.

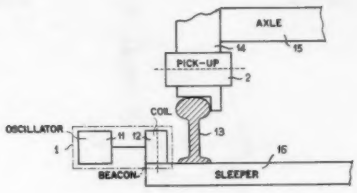
4,274,611

DEVICE FOR THE DETECTION OF THE POSITION OF A RAILWAY VEHICLE

Jean Salmon, Aulnay Sous Bois, France, assignor to Jeumont-Schneider, Puteaux, France

Filed Jul. 5, 1979, Ser. No. 54,818
Claims priority, application France, Jul. 17, 1978, 78 21169
Int. Cl.³ B61L *25/02*
U.S. Cl. 246—34 R **6 Claims**

1. A device for the detection of the position of a vehicle running on a railway track, characterized in that it includes:
at least one emitter beacon for emitting a beacon frequency, said beacon including a generator of alternating current and a coil having a vertical axis located at a predetermined point on the track, near to one of the running rails;
aboard the vehicle, near to one of the rails, a pick-up unit including two groups of two receiver coils the axes of which are horizontal and perpendicular to the running rail, the two coils of each group being connected in accordance with a differential system to the inputs to a differential amplifier means;
a filtering and detection unit connected to the outputs from the differential amplifier means, said unit including two bandpass filter circuits, the central frequency of which is equal to said beacon frequency, each filter circuit being connected to the output from said differential amplifier means;



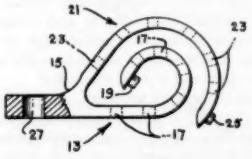
circuit means for multiplying together the output signals from the two filter circuits; and
circuit means for detecting and comparing output signals from the multiplying circuit means with a predetermined threshold in order to deliver a logical signal representative of the presence of said beacon frequency.

4,274,612

MULTIPLE DIAMETER WIRE BUNDLE SUPPORT

Dalton L. Massey, Benbrook, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 15, 1979, Ser. No. 48,874
Int. Cl.³ B65D *63/00;* **F16L** *3/08*
U.S. Cl. 248—74 PB **2 Claims**

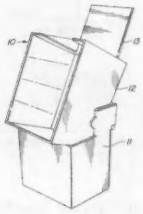


1. A multiple diameter wire bundle support for fixedly retaining various numbers and diameters of wires and the like in position on a subassembly structure comprising a first arm extending outwardly from a common anchor point, a second arm extending outwardly from the same common anchor point, a first pin member fixedly attached near the outer end of said first arm and extending inwardly therefrom, a second pin member fixedly attached near the outer end of said second arm and extending outwardly therefrom, the inner ends of said first and second arms meeting to form a common anchor portion, a series of equally spaced holes along the length of said first and second arms, and an opening in the anchor portion for attaching the support to a subassembly structure, the outer ends of said first and second arms being adjustably attachable to one another by the insertion of said first pin member into one of the holes in said second arm and the insertion of said second pin member into one of the holes in said first arm, thereby forming a substantially circular enclosure for housing wire bundles of various diameters therein.

4,274,613
DISPLAY STAND WITH THREE-SIDED BASE HAVING PARTIAL REAR WALL

Ronald H. Taub, 1154 Sheridan Rd., Highland Park, Ill. 60035

Filed Sep. 25, 1978, Ser. No. 945,244
Int. Cl.[2] A47G *23/02*
U.S. Cl. 248—150 8 Claims



1. A display stand base fabricated from a single blank of sheet material and being collapsible along pre-scored fold lines to provide a compact package for shipment and storage,

said base comprising an upstanding front wall and a pair of side walls hingedly joined to said front wall at lateral marginal limits thereof, a juncture of said front wall with opposed said side walls being defined by a pre-scored vertical fold line, each of said side walls extending rearwardly of said front wall at either opposed sides thereof and generally normally thereto,

said front wall having a horizontal cut at a predetermined level intermediate upper and lower edges thereof and extending across the full expanse of said front wall to divide said front wall into a rearwardly shiftable upper section and a fixed lower section,

each of said side walls having a horizontal cut extending from a forward edge thereof rearwardly a predetermined distance but terminating short of a rear edge of said side walls, said cut in each of said side walls being an uninterrupted extension of said cut in the front wall and at substantially the same level as said cut in the front wall,

said side walls defining at respective rearward limits of each horizontal cut therein a pre-scored vertical hinge line projecting generally normally to and upwardly of said horizontal cut to an upper terminal edge of each of said side walls to divide each of said side walls into a pivotal forward segment and a fixed rear panel,

each said pivotal forward segment constituting a physical rearward continuation of said upper section of said front wall and being joined thereto along said vertical fold line, said pivotal forward segment of each of said side walls being folded rearwardly along each corresponding said hinge line to lie contiguously against a corresponding said fixed rear panel, and

said shiftable upper section of said front wall being displaced rearwardly of and generally paralleling said fixed lower section of said front wall to form a rear wall for said base.

4,274,614
LOCKING DEVICE AND THE LIKE

Anthony C. Worrallo, 15 Sprott Rd., Auckland 5, New Zealand

Filed May 24, 1978, Ser. No. 909,264
Int. Cl.[3] A47G *29/02*
U.S. Cl. 248—243 9 Claims

1. A locking structure comprising

an element having

a web,

flanges extending from opposite ends of said web, and

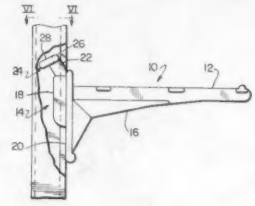
a pair of laterally spaced, oppositely directed lips extending from said flanges which define a mouth therebetween, each of said lips having an inner face formed with longitudinally extending serrations and having an outer face; and

a bracket having

a main portion with an abutting surface,

a neck protruding from said main portion with one end coupled to said main portion and a free end remote from said main portion, said neck being dimensioned so it may pass through said mouth, and

a locking formation mounted on said free end of said neck and extending laterally from each side of said neck, the



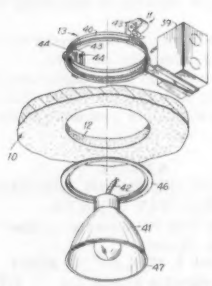
dimensions of said locking formation in a direction transverse of said neck being greater than the width of said mouth, said locking formation having an abutting face adapted to abut said serrations on said inner faces of said lips;

whereby, when said neck is located in said mouth and said bracket is located in position relative to said element, said abutting surface of said main portion is brought into abutting relationship with said outer face of said lips and said abutting face of said locking formation is brought into abutting relationship with said serrations on said inner faces of said lips.

4,274,615
ATTACHMENT CLAMP FOR LIGHTING FIXTURE

Kingsley Chan, Rutherford, and Neil Russo, Howell, both of N.J., assignors to Lightolier Incorporated, Jersey City, N.J.

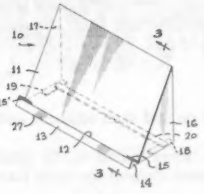
Filed Jul. 9, 1979, Ser. No. 56,030
Int. Cl.[3] B42F *13/00*
U.S. Cl. 248—343 5 Claims



1. An attachment clamp for securing a lighting fixture to a ceiling of sheet material, such as wall board, acoustical tile or the like, comprising an integral resilient metallic bifurcate body portion including a spaced pair of upstanding legs, a support foot extending from the lowermost end of said legs in a direction perpendicular thereto and projecting to one side of said body portion, an adjustment arch extending to said one side of said body portion in upwardly spaced relation to said foot, said arch including an upper branch extending from the upper end of said body portion, a lower branch and an arcuate connector portion extending between said braches, a clamp portion extending from said lower branch, said clamp portion projecting outwardly through the space between said legs and including a depending spanner portion having a locking finger formed

thereon, said finger being disposed to said one side of said body portion in parallel spaced relation to said support foot, and threaded adjustment means extending between said upper and lower branches for variably spacing said branches in accordance with the adjusted position of said threaded means, thereby to shift said locking finger toward and away from said support foot for clamping engagement of a ceiling portion between said foot and finger.

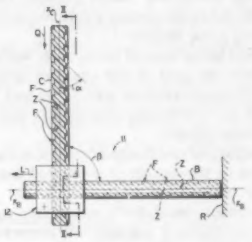
4,274,616
BOOK STAND
Alfred G. Radtke, 2351 N. Fernview, Simi Valley, Calif. 93065
Filed Apr. 20, 1979, Ser. No. 32,101
Int. Cl.³ A47B *97/04*
U.S. Cl. 248—459 **5 Claims**



1. A reading stand comprising the combination of:
a blank of sheet material divided into a plurality of integral parts;
score lines intended to be folded over so that said integral parts provide an upright structure supportable on a flat surface;
said upright structure including said integral parts having a back member angularly related to said flat surface and a forward extending lip arranged normal to said back member whereby said back member and said lip cooperate in an engagingly manner to receive and hold a book;
side elements at each side of said back member bracing said back member on said flat surface;
base support means carried on said side elements and said lip for rigidizing and stabilizing said upright structure; and
said base support means including a flap strip foldably carried on the lower edge of each of said side elements being folded towards each other and a brace strip detachably interconnecting said flap strips together.

4,274,617
ACTUATOR FOR CORE OR STRIPPER OF A MULTIPART MOLD
Karl-Hermann Schriever, Pretoria, South Africa, assignor to Hasco-Normalien Hasenclever & Co., Lüdenscheid, Fed. Rep. of Germany
Filed May 2, 1980, Ser. No. 146,330
Claims priority, application Fed. Rep. of Germany, May 3, 1979, 2917799
Int. Cl.³ B29D *1/022*
U.S. Cl. 249—63 **10 Claims**

1. In combination with a mold having at least two primary mold parts movable in a primary direction away from each other from a closed position defining a mold cavity to an open position at least one secondary mold part movable in a secondary direction transverse to said primary direction relative to said primary mold parts, and drive mens for displacing said mold parts between said positions, an actuator comprising:
a primary rack extending parallel to said primary direction;
a secondary rack extending parallel to said secondary direction and secured to said secondary mold part, said racks having respective primary and secondary rows of teeth having substantially parallel tooth flanks inclined to said directions, said primary row meshing with said secondary row of teeth; and



means securing one of said racks to one of said primary mold parts for joint displacement therewith in said primary direction relative to the other of said racks.

4,274,618
STRAND LIFTING SYSTEM
James A. Orr, 1570 Guadalajara Dr., San Jose, Calif. 95120
Filed Aug. 20, 1979, Ser. No. 68,146
Int. Cl.³ F21B *19/00*
U.S. Cl. 254—29 A **6 Claims**

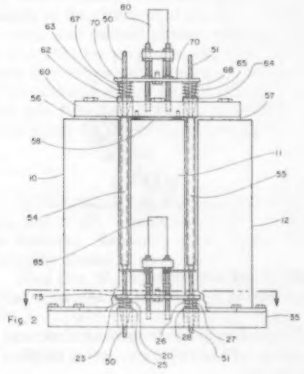


Fig. 2

1. A strand lifting system comprising:
at least one strand for lifting and lowering a selected load;
upper and lower plate means, each plate means defining at least as many openings therethrough in a substantially matching arrangement as there are strands, for passage of one of said strands therethrough each with the upper and lower plate means being aligned with respect to the other to substantially align the openings in each plate means with those in the other;
jack means disposed between said upper and lower plate means for providing a selected separation between them and for maintaining alignment of the plate means openings, one plate means with respect to the other;
chamber means within each opening in the upper and lower plate means defining a tappered hole therethrough and having a strand pass unrestrictedly therethrough;
chuck means disposed adjacent to each chamber means for engaging the strand passing therethrough upon the seating of the chuck means within the chamber means in response to a seating force; and for permitting the unrestricted passage of the strand when the chuck means is disengaged from the chamber means;
bias means coupled to each of said chuck means for biasing said chuck means in the disengaged position from said chamber means; and

seating means for providing said applied seating force to the chuck means;

said chuck means each having:

an outwardly projecting flange portion, the top surface being adjacent to the seating means for communication of said seating force thereto;

a nose portion being tapered on its outer surface to substantially match the taper of said chamber means; and

a shank portion intermediate said flange and nose portions, said shank portion having substantially uniform thickness over its entire length;

the lower surface of said flange portion sloping inwardly and away from its top surface at a selected angle toward the shank portion;

said chuck means also defining an interior cylindrical hole along its longitudinal axis with the diameter of said hole through the flange and shank portions being greater than that of the nose portion.

4,274,619

WEED EXTRACTION APPARATUS

William C. Redmond, 7675 Verdugo Crestline Dr., Tujunga, Calif. 91042

Filed Oct. 22, 1979, Ser. No. 86,904

Int. Cl.³ B66F *3/00*

U.S. Cl. 254—132 **1 Claim**

1. A weed puller comprising:

(a) a plier having a joint (**4,11** or **14**) and a pair of handles (**1,3**),

(b) an elongated rigid whole cylindrical element (**2'**) rigidly attached at right angles to one part of the plier adjacent to said joint, and

(c) an elongated segment of a rigid cylindrical element (**5'**) rigidly attached to the other part of the plier adjacent to said joint,

being disposed to contact the full extent of said elongated rigid whole cylindrical element when the handles are together, and

adjacent ends of said whole rigid cylindrical element (**2'**) and said elongated segment of a rigid cylindrical element (**5'**) being shaped obliquely (**17**) with respect to the axis of said whole rigid cylindrical element to form a spade.

4,274,620

ANCHOR WINDLASS

Edmond Uher, Oberägi, Switzerland, assignor to Dieter Delwing, Zug, Switzerland

Filed Sep. 27, 1979, Ser. No. 79,544

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842814

Int. Cl.³ B66D *1/14*

U.S. Cl. 254—351 **10 Claims**

1. A winch comprising:

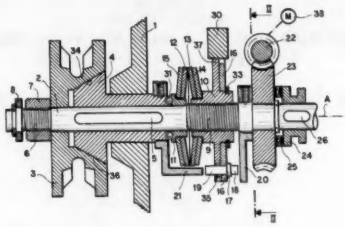
a housing;

a shaft centered on and rotatable about a shaft axis in said housing;

a wheel rotatable on said shaft about said axis, whereby a flexible element can be spanned over said wheel;

an abutment axially fixed on said shaft and juxtaposed with said wheel;

an entrainment element rotationally fixed but axially displaceable on said shaft and engageable with said wheel, whereby said element can be moved axially forward into engagement with said wheel to wedge same against said abutment and rotationally couple said wheel to said shaft;



a nut threaded on said shaft adjacent said entrainment element;

a compression spring braced axially between said nut and said entrainment element for force transmission therebetween; and

means including a pawl for temporarily rotationally arresting said nut, whereby, when said shaft is rotated in one direction with said nut rotationally arrested, said nut will be screwed forwardly on said shaft to bear via said spring on said entrainment element.

4,274,621

TUBES AND STRUCTURES FORMED THEREBY

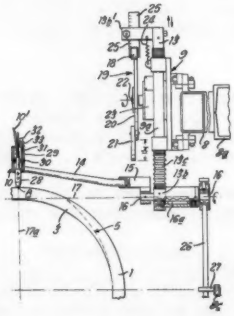
Jan Illakowicz, 43, Barn Way, Wembley, Middlesex, and Derek B. Enfield, Unit 14, Alston Works, Barnes, Hertsford, both of England

Continuation of Ser. No. 665,769, Mar. 11, 1976, abandoned. This application Apr. 20, 1978, Ser. No. 898,200

Claims priority, application United Kingdom, Mar. 14, 1975, 10716/75

Int. Cl.³ B23K *7/04, 7/10*

U.S. Cl. 266—61 **16 Claims**



1. Apparatus for forming a profiled end face of a tube having a substantial wall thickness to enable said tube to be joined to an intersecting surface which comprises:

a cutter disposed in cutting position relative to the wall of the tube;

drive means to produce relative rotational movement between said cutter and the tube;

means for moving the cutter axially along the wall of the tube to follow a predetermined profile;

means for pivoting said cutter about a secondary axis which is perependicular to the axis of the tube and is intersected by the center line of the cutter to dispose the cutter at a desired angular position relative to the axis of the tube;

cutter control means comprising a displaceable mounting for moving said secondary axis radially across the thickness of the end face; and

means synchronizing the radial movement of said secondary axis with said rotational movement to move the intersection of said secondary axis and the center line of said cutter along a desired path across the end face of said tube as said tube is moved relative to said cutter.

4,274,622

DEVICE FOR SEPARATING SLAG FROM MOLTEN BATH

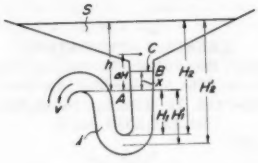
Hisashi Ohmori, Kurashiki, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 20, 1979, Ser. No. 105,721

Claims priority, application Japan, Jan. 11, 1979, 54-955

Int. Cl.³ F27D *3/14*

U.S. Cl. 266—227 **5 Claims**



1. A device for separating slag from molten bath for use with a molten bath container for enclosing therein a molten bath composed of molten metal and slag floating on and covering the free surface of said molten metal, said device comprising a member having a U-shaped refractory tubular passage firmly secured to a discharge outlet of said container, and stationarily disposed beneath said container, when said container is brought into its molten bath discharge position, said U-shaped refractory tubular passage being so shaped and arranged that the static pressure of that portion of the molten bath, which is in said U-shaped refractory tubular passage after said molten bath has been discharged from said container, is kept in balance with the static pressure of the slag following said flow of the molten bath, thereby preventing discharge of said slag out of said U-shaped refractory tubular passage.

4,274,623

METHOD AND APPARATUS FOR STACKING PRINTED PRODUCTS CONTINUOUSLY ARRIVING IN A SUBSTANTIALLY FISH SCALE OVERLAPPING ARRANGEMENT

Walter Reist, Hinwil, and Werner Honegger, Rüti, both of Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Continuation of Ser. No. 578,357, May 16, 1975, abandoned. This application Oct. 22, 1979, Ser. No. 87,093

Claims priority, application Switzerland, May 28, 1974, 7234/74

Int. Cl.³ B65H *31/04, 31/10*

U.S. Cl. 271—217 **7 Claims**

1. An apparatus for stacking flat printed products arriving in a continuous imbricated stream into a substantially spiral-shaped stack, comprising:

conveying means for conveying said imbricated stream, said conveying means having an outfeed portion;

a rotatable stack support defining a substantially plane support surface and having an axis of rotation;

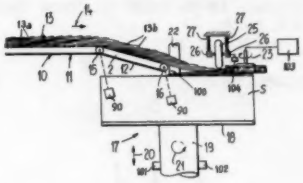
means for rotating the stack support about its axis of rotation;

said stack support being positioned below said outfeed portion;

said outfeed portion being directed along a substantially straight line path in a direction radially offset with respect to said axis of rotation;

deflection means operatively associated with said stack support and arranged downstream with respect to said outfeed portion;

said deflection means individually deflecting each of the printed products delivered by said outfeed portion in the plane of each such printed product so as to form a spiral-shaped stack which comprises a plurality of successive



windings, each of which has printed products partially overlapping one another;

said deflection means including stop means positioned to engage an edge of each infed printed product and pressure exerting means radially offset from and effective at least substantially in the direction of said axis of rotation;

means to move said outfeed portion relative to said stack support in a direction parallel to said axis of rotation; and

wherein said stop means is arranged at the region of the axis of rotation of the stack support and includes a detachably mounted tube arranged at the stack support, said tube serving as a core for the spiral-shaped stack.

4,274,624

DUAL-MODE SHEET SORTING APPARATUS

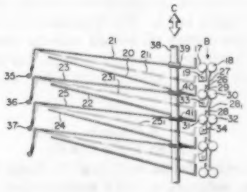
Tadashi Sato, Kokubunji; Shigeru Yoshimura, Yokohama, and Kiyomichi Ichikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,456

Claims priority, application Japan, Oct. 30, 1978, 53/133374; Oct. 30, 1978, 53/133375; Nov. 16, 1978, 53/141388

Int. Cl.³ B65H *31/24, 39/11*

U.S. Cl. 271—292 **6 Claims**



1. A dual-mode sheet sorting apparatus, comprising:

first sheet storing means for storing sorted sheets, said first sheet storing means including a plurality of first bin members fixed to a frame of the apparatus;

second sheet storing means including a plurality of second bin members movable relative to said frame and disposed in alternating sequence with respect to said first bin mem-

bers, the number of said second bin members corresponding to the number of said first bin members; and

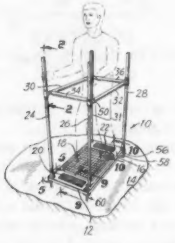
driving means for selectively moving said second sheet storing means relative to said frame and said first sheet storing means between a retracted position for permitting passage of the sheets into said first sheet storing means but blocking passage of the sheets into said second sheet storing means, and a storing position for permitting passage of the sheets into said second sheet storing means but blocking passage of the sheets into said first sheet storing means.

4,274,625

EXERCISING APPARATUS

Salvatore Gaetano, 130-16 115th St., South Ozone Park, Queens, N.Y. 11420

Filed Dec. 26, 1978, Ser. No. 972,669
Int. Cl.[3] A63B *23/06*
U.S. Cl. 272—69 **16 Claims**



1. An exercising apparatus, comprising:

a base member; a roller assembly positioned on said base member and comprising an array of discrete rollers, and a frame upwardly extending from said base member and defining an enclosed exercising area; said roller assembly comprising a series of parallel axles, a plurality of closely spaced rollers mounted on said axles for individual rotation thereon, and support means for supporting said axles; said support means comprising a series of elongated support bars spacedly positioned from each other and being in perpendicular relationship with said axles, aligned bores formed in said support bars for rotatingly receiving said axles therethrough, said rollers being located along the sections of said axles between the support bars, such that there are a pair of closely spaced rollers located on each axle between adjacent support bars with the support bars being closely spaced to the rollers, and further comprising a longitudinal channel formed along the top of each support bar, a vertical opening downwardly extending from the top of each bar to the respective bores in that bar, whereby lubricating oil placed into the channel of a bar can flow therefrom to each bore in the bar and then along the axles to thereby lubricate the roller assembly.

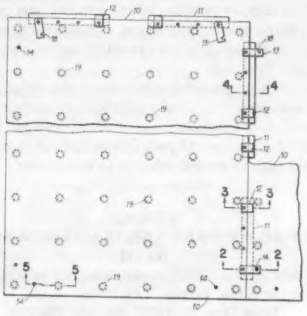
4,274,626

EXERCISE FLOOR

Richard W. Grosser, Boone, and Virgil L. Long, Sr., Jefferson, both of Iowa, assignors to AMF Incorporated, White Plains, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,230
Int. Cl.[3] A63B *5/00;* **E04F** *15/22*
U.S. Cl. 272—109 **3 Claims**

1. A portable gymnastic exercise floor, comprising a plurality of like sized boards which are edge butted and latched together, the butt edge of one of a pair of abutted boards having spaced top and bottom overhanging tabs affixed thereto, the butt edge of the other of said pair of abutted boards being positioned between said tabs, and notched latches along one of said butt edges and latch posts along the other of said butt edges for having said latches hooked thereon to latch said pair of abutted boards together, said boards comprising 4×8 plywood, said tabs and latches comprising flat metallic stock,



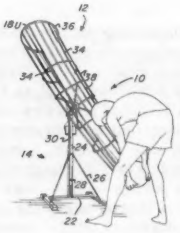
said latch posts comprising a nut and bolt subassembly, and like nut and bolt subassemblies connecting said tabs and latches to their respective boards.

4,274,627

EXERCISE APPARATUS

Robert M. Fenner, Rte. 3, Box 156, Conifer, Colo. 80433, and Edward P. Franz, 3764 Avocado Blvd., La Mesa, Calif. 92041

Filed Oct. 22, 1979, Ser. No. 86,688
Int. Cl.[3] A63B *23/02*
U.S. Cl. 272—117 **11 Claims**



1. Exercise apparatus comprising: support means defining a substantially horizontal axis of pivotal movement elevated above ground level, and a generally tubular chute open at both ends and mounted intermediate its ends for rotational movement upon said support means axis, said chute being curved with the concavity therein facing away from the support means, said chute having an arc of curvature lying between approximately 45° and 90°, and wherein the chute is slit longitudinally along the concavity therein, and said slit is of a width subtending an angle of substantially less than 180° so as to prevent removal of a ball from the chute except at its open ends.

4,274,628

WEIGHT LIFTING BAR APPARATUS

Jesse Hoagland, 333 Bellevue Ave., Trenton, N.J. 08618

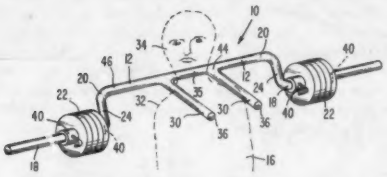
Filed Sep. 12, 1979, Ser. No. 75,281
Int. Cl.[3] A63B *13/00*
U.S. Cl. 272—123 **11 Claims**

1. A weight lifting bar apparatus, particularly adapted for use in performing leg exercises such as deep knee bends and toe lifts, which comprises:

(a) a support bar means extending laterally and adapted to be supported by the user to hold the weight lifting apparatus;

(b) a weight retaining bar means spaced laterally outward from each end of said support bar means, said weight retaining bar means being adapted to hold the weight of the weight lifting apparatus thereon;

(c) a displacement coupling means interconnecting said weight retaining bar means with the ends of said support bar means in a displaced parallel orientation wherein the axis of said weight retaining bar means is displaced below



and parallel with respect to the axis of said support bar means; and

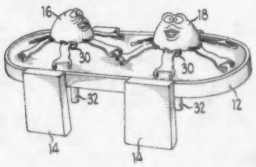
(d) a projecting support means secured to said support bar means and extending laterally therefrom and downwardly to rest upon the shoulders and chest of the user to facilitate retaining of the apparatus by the user and to more evenly distribute the weight thereof said support means pressing against the chest of a user under the influence of weights on the weight retaining bar means.

4,274,629

COMBATIVE GAME APPARATUS

Michael J. Ferris, and Henry Arias, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 9, 1979, Ser. No. 82,541
Int. Cl.[3] A63F 9/00
U.S. Cl. 273—1 R **12 Claims**



1. A combative toy, comprising:

a playing surface:

a movable member rotatably mounted on said playing surface;

means for rotating said movable member;

at least one appendage detachably secured to said movable member; and

a second movable member rotatably mounted on said playing surface, means for rotating said second member, at least one appendage detachably secured to said second member, said appendage on each movable member including at an outer end thereof means for hooking the corresponding means for hooking defined on the appendage detachably secured to the other movable member;

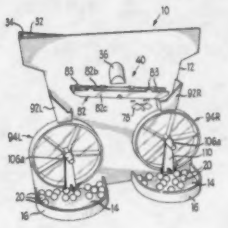
said appendage including an inner end with means for connecting said appendage to said movable member, said connecting means allowing vertical movement of said appendage relative to said playing surface due to centrifugal force upon rotation of said movable member.

4,274,630

GAME APPARATUS USING VISUAL/MOTOR SKILLS

Ralph J. Kulesza, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Apr. 21, 1980, Ser. No. 142,343
Int. Cl.[3] A63F 7/02
U.S. Cl. 273—1 R **14 Claims**



1. Game apparatus comprising:

a plurality of playing pieces having different identifying indicia thereon:

hopper means for holding said pieces having an outlet;

dispensing means for directing said pieces from said hopper outlet alternately between a plurality of spaced apart dispensing positions; and

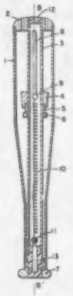
receiving means at each position including a plurality of separate compartments therein and manually movable to align a selected compartment into position for receiving a playing piece from said discharge means having an indicia corresponding to indicia of said selected compartment.

4,274,631

BASEBALL PRACTICE BAT

Tadao Hayazaki, 497-1 Naoe Yourou-cho, Yourougun, Gifu-ken, Japan

Filed Mar. 8, 1979, Ser. No. 18,788
Claims priority, application Japan, Mar. 8, 1978, 53-030113
Int. Cl.[3] A63B 69/36
U.S. Cl. 273—26 B **4 Claims**



1. A baseball practice bat comprising a body with a hollow interior, a pipe fastened within the body with one of its ends fitting into a cap at one end of said bat and its other end fitting into the handle at the other end of said bat, a pair of diametrically opposed, guide slits longitudinally formed in said pipe, a weight slidably mounted exteriorly around said pipe, a supporting pin extending through said guide slits and said weight and slidably fixing said weight to said pipe, and an elongated elastic member extending inside the pipe having one of its ends

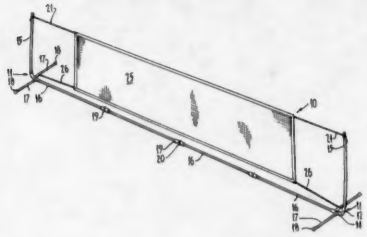
fixed to the weight at the pin and its other end fixed at the handle of the bat.

4,274,632

SUPPORTING MEANS FOR NETS AND THE LIKE FOR SPORTING ACTIVITIES

Brian J. Jacobs, 34 Patty St., Mentone, Victoria, Australia (3194)

Filed Oct. 23, 1978, Ser. No. 953,744
Int. Cl.[3] A63B *69/00*
U.S. Cl. 273—29 BC **7 Claims**



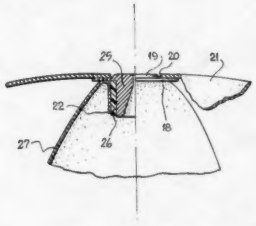
1. A free standing net support for sporting activities comprising a pair of substantially upright posts, a post support receiving each of said posts, rigid spacing means received in said post supports adjacent the base thereof and retaining said posts in a predetermined spaced relationship, said spacing means adapted to rest on a surface, a pair of legs attached to each support and extending laterally to opposite sides of each of said supports and of said spacing means, said legs being angularly adjustable relative to said supports, said posts being angled upwardly relative to said surface and outwardly from each other and being resilient and adapted to be pulled into a substantially vertical position when a net cord is attached thereto and strained, said laterally extending legs preventing tilting of said net support in a direction transverse to the plane of said net.

4,274,633

INFLATABLE BLADDER AND VALVE

Hugo Benscher, Bondi, Australia, assignor to Benscher & Sons Pty. Limited, Botany, Australia

Filed Aug. 30, 1979, Ser. No. 71,151
Claims priority, application Australia, Sep. 8, 1978, PD5868; Nov. 27, 1978, PD6936; May 8, 1979, 46867/79
Int. Cl.[3] A63B *41/04*
U.S. Cl. 273—65 C **1 Claim**



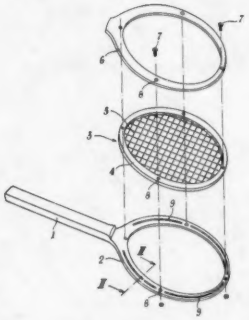
1. In the combination of an inflatable bladder and valve for inflating the bladder for use with a ball cover in which the cover is of a predetermined thickness having inner and outer surfaces and an opening of a predetermined size through which the bladder and valve may be selectively inserted when said bladder is in a deflated condition, the improvement comprising said valve means including a valve body having an air passageway for communicating between a valve inlet at one end of the valve body and a valve outlet at the other innermost end of the valve body, said valve having a continuous single flange of flexible material surrounding and extending laterally of said body from a point spaced from the inlet end of said body by a distance substantially equal to the predetermined thickness of the ball cover, said flange being of a dimension to continuously contact the internal surface of the ball cover surrounding the opening therein, said inlet of said valve having lateral dimensions substantially equal to the dimension of the opening in the ball cover, elastic compression ring means surrounding said body of said valve in airtight relationship and extending along a portion of said body between said continuous flange and said outlet end of said valve, said bladder having an opening therein defined by an inverted neck portion, said inverted neck portion surrounding and being attached in airtight relationship along said compression ring means so as to extend between said flange and said outlet of said valve, whereby said continuous flange is urged against the inner surface of said ball cover when said bladder in inflated.

4,274,634

TENNIS RACKETS

Nando Berluti, No. 8, Piazza Rosselli, 60044 Fabriano, Italy

Filed Nov. 29, 1979, Ser. No. 99,194
Claims priority, application Italy, Sep. 21, 1979, 50320 A/79
Int. Cl.[3] A63B *49/02, 49/04*
U.S. Cl. 273—73 L **2 Claims**



2. A racket comprising a replaceable string-frame and a racket-frame with a handle, said frames having the same shape and a continuous annular periphery, a plurality of Allen screws for fastening said string-frame to said racket-frame to form a single rigid frame, said screws having their heads sunk in respective holes of said counter-frame, and their shank screwed in holes of said racket-frame, said holes being uniformly distributed along the annular periphery of said frames, said racket-frame having on its surface abutting said string-frame a peripheral groove between each adjacent hole pairs, said grooves being intended to receive weight elements for balancing the racket.

4,274,635

COMBINATION SOCCER/HOCKEY GAME BOARD

Sarkis B. Pakogian, P.O. Box 9440, Alexandria, Va. 22304

Filed Feb. 6, 1980, Ser. No. 118,871
Int. Cl.[3] A63F *7/06, 7/36*
U.S. Cl. 273—85 R **8 Claims**

1. A combination soccer/hockey game board for use with a rolling sphere comprising;

a playing surface surrounded by a vertical wall member,

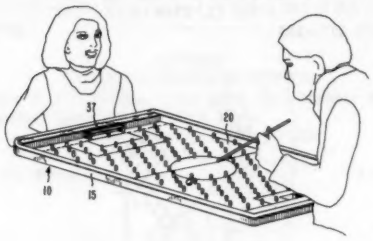
a plurality of obstructions disposed on said playing surface in rows which extend in four directions,

said rows from lanes which permit the rolling sphere to travel in three of said directions, while impeding the travel of said sphere in the fourth direction,

two goal elements are positioned at opposite ends of the

playing surface having obstructions disposed at the midpoint of their respective openings,

a plurality of removable wall member elements disposed



behind the respective goal elements, the presence of which conforms the playing surface to a soccer field, and the absence of which conforms the playing surface to a hockey ring.

4,274,636

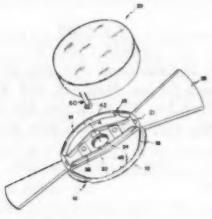
FLYING TARGET PIGEONS

Ludovico Lante-Montefeltro, Avda. Libertador Edif-Siclar., 2° Piso, Ofic. No. 23, Caracas, Venezuela

Continuation-in-part of Ser. No. 604,069, Aug. 12, 1975, abandoned, Ser. No. 679,135, Apr. 21, 1976, Pat. No. 4,077,384, and Ser. No. 762,019, Jan. 24, 1977, Pat. No. 4,133,532. This application Mar. 1, 1978, Ser. No. 882,907

Int. Cl.[2] F41J *9/16*

U.S. Cl. 273—365 **26 Claims**



1. A target pigeon comprising:

a cup-shaped cap having a side wall centered on a cap axis and having a pair of axially opposite ends, and an end wall closing said side wall at one of said ends;

a generally flat and circular ring centered on a ring axis and having a plurality of angularly equispaced similar major side portions of predetermined relatively short axial height and a plurality of angularly equispaced similar minor side portions alternating with said major portions and of predetermined relatively long axial height;

means including interengaging formations on said ring and on the other end of said side wall for holding said cap and ring releasably together with said axes aligned and said other end of said side wall bearing on said ring and for freeing said cap and ring from each other when impacted; and

respective radially extending vanes on said ring at said minor portions thereof, said vanes being tipped propeller-fashion relative to each other, said cap, ring, formation, and vanes being made of at least limitedly elastic high-impact material.

4,274,637

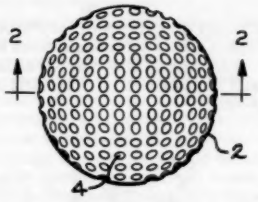
GOLF BALL HAVING CELLULAR COVER

Robert P. Molitor, South Hadley, Mass., assignor to Questor Corporation

Continuation-in-part of Ser. No. 7,964, Jan. 31, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,658

Int. Cl.[3] A63B *37/12*

U.S. Cl. 273—235 R **24 Claims**



1. A golf ball having a center and a cover wherein said cover is formed from a cellular natural or synthetic polymer.

4,274,638

GAME SWITCH MATRIX

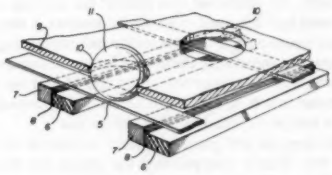
Graham A. Jullien, Windsor, Canada, assignor to James J. Oqilvy, Windsor, Canada

Filed Oct. 19, 1978, Ser. No. 952,736

Claims priority, application Canada, Nov. 14, 1977, 290796

Int. Cl.[3] A63F *3/08*

U.S. Cl. 273—238 **8 Claims**



1. A game switch matrix comprising:

(a) a plurality of first spaced parallel strips of conductive, flexible resilient material,

(b) a plurality of second spaced parallel strips of conductive material disposed orthogonal to, below, in a plane parallel to, and spaced from the first plurality of strips,

(c) means for supporting the first plurality of strips, said supporting means being comprised of insulators of unyieldable material having a first strip supporting surface which is higher than the upper contacting surface of the second strips, disposed along lines parallel to each strip of the second plurality of strips, providing an insulating air gap between the first and second plurality of strips, whereby, upon depression of one strip of said first plurality of strips at a point adjacent one strip of said second plurality of strips, said one strip of the first plurality of strips is caused to pass through said air gap and make electrical contact with said one strip of the second plurality of strips, and said one of said first plurality of strips is restricted from contacting any other of said second plurality of strips,

(d) a table overlying the top of the first plurality of parallel strips, the table containing holes over said first strips to accommodate balls for depression of said one strip of the first plurality of strips,

(e) the strips being spaced leaving gaps between each of said first strips and gaps between each of the second strips, the gaps having their narrowest dimension larger than a predetermined diameter, further including means for allow-

ing the table to be shifted to orient the holes over said gaps, so as to shift any playing balls which may be inserted by a player within said holes to positions over said gaps and thereby allow them to fall through said gaps, and further including a sink disposed below said plurality of said second strips having a ball channelling outlet leading to a ball containment chamber.

4,274,639

EXERCISE AND GAME APPARATUS

Ralph W. Flanders, 19726 Rolling Acre, South Bend, Ind. 46614

Filed Aug. 2, 1979, Ser. No. 63,248
Int. Cl.³ A63B *63/08, 21/00;* **A63H** *33/22*
U.S. Cl. 273—402 **8 Claims**

1. An exercise game apparatus comprising a ball, shaft means extending outwardly from said ball and forming a rotational axis for said ball, a hoop-like supporting structure for said ball and said shaft means, a weight means connected to said ball and offset from the rotational axis thereof for causing said ball to spin as said ball is moved in an orbital manner, a means including a bar connected to said hoop-like ball supporting structure and extending outwardly therefrom for use in manipulating the apparatus, a fastening portion at the end of said bar means for attachment to a belt, and a handle extending outwardly from said bar means for steadying said apparatus.

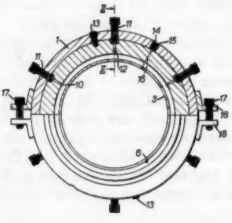
2. An exercise and game apparatus as defined in claim **1** in which two of said manipulating bar means are diametrically opposed to each other on said hoop-like structure.

4,274,640

SEALING DEVICES

Barrie J. A. Cook, Penarth, Wales, assignor to Sibex (Constructions) Limited, Glamorganshire, England

Filed Aug. 1, 1979, Ser. No. 62,614
Int. Cl.³ F16J *15/06;* **F16L** *55/18*
U.S. Cl. 277—9 **8 Claims**



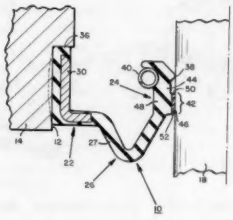
1. A sealing device for insertion between opposed end flanges of adjacent pipeline sections, comprising a split ring with an annular sealing member seated therein to be exposed at one axially facing side, and cam means operable from the radially outward side for urging said sealig member outwardly, in the axial direction, from said ring.

4,274,641

SHAFT SEAL AND METHOD

Douglas A. Cather, Jr., Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Filed Oct. 29, 1979, Ser. No. 89,281
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—153 **37 Claims**



1. An annular shaft seal for sealing against the flow of fluid through an annular space between a bore of a housing and a shaft extending through the bore, comprising:

(a) an annular bore retention section;

(b) an annular sealing element;

(c) an annular convoluted flex section connecting said bore retention section to said sealing element and adapted to allow said sealing element to move freely radially with a shaft and relative to said bore retention section; and

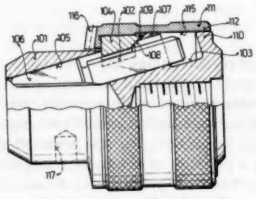
(d) said sealing element including: (1) a sealing lip adapted to sealingly contact a shaft extending through said seal and also including (2) a bearing member having a cylindrical low friction bearing surface adjacent said sealing lip adapted to contact a shaft in sealing contact with said sealing lip.

4,274,642

TOOL CHUCK

Steffen Wünsch, Dettenhausen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,260
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808253
Int. Cl.³ B23B *31/04*
U.S. Cl. 279—62 **4 Claims**



1. A tool chuck particularly for a hammer or percussion drill to receive a tool at a tool receiving end thereof having

a collet, the collet having oblique passages for holding and guiding a plurality of chuck jaws, said chuck further including a rotatable structure having a threaded ring surrounding said collet and engaging said chuck jaws, and a bushing coaxially surrounding said threaded ring and secured thereto to rotate therewith,

and a friction brake to prevent relative rotation of the rotatable structure and said collet in one direction, while permitting rotation in the other, and automatically tightening upon blows in axial direction, comprising

an inner support surface formed on said threaded ring adjacent the tool receiving end thereof;

and outer conical surfaces formed on said collet in engagement with the inner conical surfaces of said threaded ring, the conical surfaces having their larger diameter positioned remote from the tool receiving end of the chuck.

4,274,643

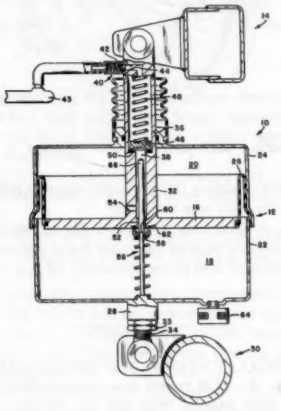
VEHICLE LEVELING DEVICE

Richard T. Hendrickson, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1978, Ser. No. 947,330

Int. Cl.³ B60G 3/14

U.S. Cl. 280—6.1 **9 Claims**



1. A leveling device for a vehicle having a vacuum source comprising:

a housing disposed between a wheel supporting assembly for the vehicle and a body assembly for the vehicle, said housing being connected to one of said assemblies;

a piston movably disposed within said housing and cooperating with said housing to define a pair of chambers, said piston including a rod extending outwardly of said housing to connect with the other of said assemblies;

passage means normally communicating said pair of chambers with each other, and

a control member cooperating with the piston and the passage means to close communication between the chambers and open communication between the vacuum source and one of the chambers when the body assembly moves a predetermined distance relative to the wheel supporting assembly, the other chamber being vented to atmosphere so as to create a pressure differential across the piston to oppose the movement of the body assembly relative to the wheel supporting assembly,

said piston rod including a bore which forms a portion of said passage means, said control member extending into the bore and opposing a first valve member which normally closes communication between the vacuum source and the pair of chambers.

4,274,644

FOUR WHEELED HAND TRUCK

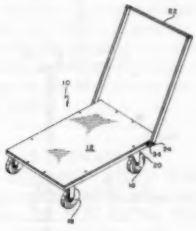
Frank E. Taylor, 1440 S. Seneca, Wichita, Kans. 67213

Filed Aug. 30, 1979, Ser. No. 71,320

Int. Cl.³ B62B 3/02

U.S. Cl. 280—39 **3 Claims**

1. A hand truck comprising a platform; a pair of wheel-connecting bars rotatably attaching to the platform; a plurality of wheels connecting to the bars, at least two of said wheels being rotatable thereon; a handle member pivotally connecting at two points on an end of said platform and circumscribing three sides of the perimeter of the platform when the handle member is in a closed position; a first gear means connected to the end of said wheel-connecting bars; a second gear means meshing with the first gear means and connecting to the handle member in proximity to the points of pivotation with the platform; handle release and locking means attached to the platform and locking the handle member either in an open or in the closed position; said wheels folding up underneath the platform and lying horizontally with respect thereto when the handle member is in the closed position; said wheels folding out from underneath the platform toward an eventual perpendicular position with respect to the underside of the platform as the handle member is released by the handle release and locking means and is pulled away from the platform while pivoting at said points of pivotation, simultaneously causing said first gear means to engage and turn said second gear means resulting in the wheel-connecting bars rotating to fold out said wheels to the perpendicular position wherein said handle member is postured in the open position forming an oblique angle with respect to the top of the platform, said hand truck additionally including a pair of plates, each having an aperture for an open position and an aperture for a closed position, and each oppositely situated with respect to each other and integrally bound to said handle member in proximity to said points of pivotation of said handle member with said platform, said handle release and locking means is connected underneath the platform and thereto; said handle release and locking means comprises a pair of spring-biased locking pins oppositely situated with respect



to each other, one of said pins inserting into the aperture for an open position of one plate and the other pin inserting into the aperture for an open position of the other plate when said handle member is in the open position, and when said handle member is in the closed position, one of said pins inserts into the aperture for a closed position of one plate and the other pin inserts into the aperture for a closed position of the other plate; and a spring-biased pin contracting means attached to said spring-biased pins to contract said spring-biased pins to release said handle member from either the open position or the closed position.

3. A hand truck comprising a platform; a first wheel-connecting bar and a second wheel-connecting bar, both rotatably attaching to said platform; a plurality of wheels connecting to said first and second bar, at least two of said plurality of wheels being rotatable thereon; a wheel-position bar pivotally engaging the first bar and pivotally connected to the second bar; a handle member pivotally connecting at two points on an end of said platform and circumscribing three sides of the perimeter of the platform when the handle member is in a closed position, said handle member being additionally bound to said first wheel-connecting bar to rotate same as said handle is pivoted about the points of pivotation with the platform; handle release and locking means attaching to the platform and locking the handle member either in an open or in the closed position; said wheels folding up underneath the platform and being horizontally with respect thereto when the handle member is in the closed position; said wheels folding out from underneath the platform toward an eventual perpendicular position with re-

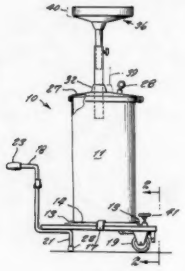
spect to the underside of the platform as the handle member is released by the handle release and locking means and is pulled away from the platform while pivoting at said points of pivotation, simultaneously causing said first wheel-connecting bar to rotate and engage the wheel-position bar resulting in said wheel-position bar rotating said second wheel bar, in order to fold out said wheels to the perpendicular position wherein said handle member is postured in the open position, a cylindrical retention member having a structure defined by at least one recess, said retention member being integrally bound to said first wheel-connecting bar, said handle release and locking means is connected underneath the platform and thereto, said retention member including an open recess and a closed recess, said handle release and locking means comprises a spring-biased pin situated at an end of the platform, said pin being inserted into the open recess when said handle member is locked in the open position and said pin being inserted into the closed recess when said handle is postured in the closed position.

4,274,645

PORTO AUTO OIL EASY DRAIN

Arthur Ferguson, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 15, 1979, Ser. No. 48,719
Int. Cl.³ B62B *1/18*
U.S. Cl. 280—47.26 **1 Claim**



1. A porto auto oil easy drain device, comprising in combination a tank mounted upon a hand cart, said cart including a frame with a wheel support at the front and a leg support at its rear, said frame including a handle at its rear, said tank having a drain valve at its bottom, an upper end of said tank being open and closable by a cover rotatably mounted thereon having an eccentrically positioned, vertical pipe inlet therethrough supporting a funnel rotatably mounted in said pipe, including means for affixing said cover and said funnel wherein said funnel comprises a pipe outlet mounted in said inlet and a basin eccentrically mounted thereupon, said means comprising a ring retainer fitted about said cover and a set screw connecting said inlet and outlet, said drain valve disposed within said frame having an outlet orifice adjacent said front.

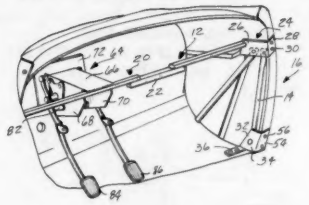
4,274,646

STEERING COLUMN AND COWL SUPPORT FRAME

Rainer C. Olligschlager, Howel, and Nelson R. Turner, Monroe, both of Mich., assignors to The Model A and Model T Motor Car Reproduction Corporation, Battle Creek, Mich.

Filed Sep. 28, 1979, Ser. No. 79,997
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—779 **3 Claims**

1. An automotive body construction comprising
a pair of parallel, longitudinal frame rails,
a floor pan superimposed on the frame,
a substantially vertical fire wall and upstanding side walls cooperating with said floor pan to enclose a cowl space,
a pair of spaced vertically aligned door hinge support brackets mounted on each of said side walls,
a horizontal cross brace generally parallel to said fire wall and joining the upper hinge support brackets of the two side walls,
a pedal support bracket secured to said fire wall and projecting therefrom into contact with said cross brace,



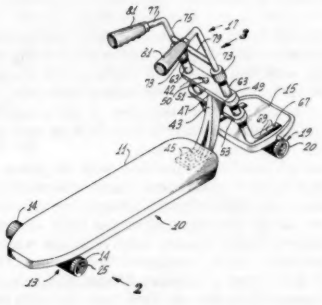
means securing said pedal support bracket to said cross brace,
means interconnecting the vertically aligned hinge support brackets on each side wall, and
a diagonal, downwardly and forwardly inclined side brace interconnecting each of the upper hinge support brackets, respectively, to said frame forwardly of said cross brace.

4,274,647

MANUALLY STEERABLE SKATEBOARD

Louis V. Drake, Jr., 1138 Fourth Ave., Los Angeles, Calif. 90019

Filed Mar. 9, 1979, Ser. No. 19,157
Int. Cl.³ A63C *17/14*
U.S. Cl. 280—87.04 A **6 Claims**



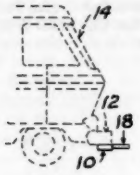
2. A generally elongated skateboard of the type having at least two sets of wheels, a structure connecting said sets of wheels, and a steering apparatus, wherein the steering apparatus comprises the combination of:
a joint in the structure located between the sets of wheels, about which joint a forward portion of the structure is capable of articulated movement with respect to the rearward portion of the structure about a substantially vertical axis; and
one of said sets of wheels being mounted in a dirigible truck and supporting said forward portion of the structure, and another of said sets of wheels being mounted in a dirigible truck and supporting said rearward portion of the structure, each of said trucks being arranged to steer said skateboard in response to rotation of said skateboard about a longitudinal axis thereof.

4,274,648

VEHICLE BUMPER STEP

Robert R. Robins, 721 Woodland, Minneapolis, Kans. 67467

Filed Apr. 5, 1979, Ser. No. 27,422
Int. Cl.³ B60R *3/02*
U.S. Cl. 280—166 **3 Claims**



1. A retractable step for a vehicle bumper having a generally vertical portion and upper and lower laterally projecting flanges normal to the plane of said vertical portion, the improvement comprising:

an upwardly open frame having forward and rearward ends and having lateral sides spaced longitudinally of said bumper;

clamp means secured to the upper limit of said frame adjacent its respective sides for gripping one said bumper flange,

said clamp means comprising a clamp member projecting outwardly from said frame and doubled back upon itself to describe a U-shape having parallel legs, and,

a stud bolt projecting through one said leg normal to the plane thereof;

arm means connected with said frame and projecting toward said bumper in the direction of said clamp means for stabilizing the position of said frame relative to said bumper,

said arm means comprising an elongated arm, a stub arm overlapping the end portion of said arm opposite said frame and having a longitudinal slot therein, and,

bolt means securing said stub arm to said elongated arm;

a step movable from a first position nested by said frame to a second position projecting beyond and normal to the vertical portion of said bumper; and,

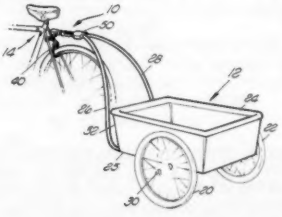
hook means for normally preventing separation of said step relative to said frame.

4,274,649

BICYCLE TRAILER AND HITCH

Ed W. Vanderhorst, 6718 Whitaker Ave., and Henry L. Vanderhorst, 6536 Langdon Ave., both of Van Nuys, Calif. 91406

Filed Feb. 15, 1979, Ser. No. 12,529
Int. Cl.³ B60D *1/06;* B62K *27/12*
U.S. Cl. 280—204 **3 Claims**



1. A quick release hitch assembly for releasably coupling a trailer to a vehicle comprising:

a coupling member having an upstanding post and a spherical ball portion attached to the top of the upstanding post, the coupling member being attached to the vehicle;

a swivel member having a socket portion for permanently mounting the swivel member essentially on the ball portion, the swivel member having a ball receiving socket therein, slightly less than half of the sphere of the ball portion being positioned in the ball receiving socket, the swivel member further having a retention disc with a central orifice having an interior chamfered edge, the central orifice of the retention disc having a diameter less than the diameter of the ball member, the ball member being loosely retained in the ball receiving socket by the retention disc when the retention disc is attached to the swivel member about the peripheral edge of the ball receiving socket whereby the swivel member is freely movable about the ball portion, the swivel member further having a hitch portion having a swivel member end surface, a first closed-ended, substantially straight, passageway extending from the swivel member end surface into the hitch portion, and a second open-ended passageway therethrough intersecting the first passageway;

a connecting member permanently attached to the trailer and having a connecting member shoulder and an attachment portion extending from the connecting member shoulder for being releasably inserted into the first passageway, the attachment portion having an attachment orifice therethrough, the attachment orifice being positioned so that it will be aligned with the second passageway when the attachment portion is inserted in the first passageway and the swivel member end surface abuts against the connecting member shoulder; and

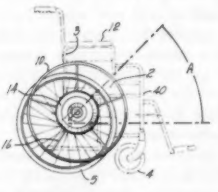
a pin for being removably inserted through the second passageway and the attachment orifice for essentially coupling the connecting member to the swivel member, the connecting member being released from the swivel member by removing the pin from the second passageway and the attachment orifice.

4,274,650

HAND DRIVE ASSEMBLY FOR A WHEELCHAIR

Hans Gilles, 249 Springhill, Rosemere, Quebec, Canada

Filed Jun. 21, 1979, Ser. No. 50,569
Int. Cl.³ B62M *1/14*
U.S. Cl. 280—242 WC **1 Claim**



1. In a wheelchair having a chassis, a seat, a back-rest, a pair of front, smaller diameter ground-engaging swivel wheels terminating below said seat, and a pair of back, large diameter ground-engaging driving wheels extending above said seat, said seat, back-rest and front and back wheels all carried by said chassis, said back wheels mounted on said chassis on each side of said seat for independent rotation about a horizontal axis transverse to and located below said seat in the region of said back-rest, the improvement comprising:

(a) a main gear gixed to, and co-axial with, each back wheel;

(b) a plate fixed to each side of said chassis;

(c) a pair of hand-operated driving rings of a diameter substantially equal to the diameter of said back wheels and carried by said plate for rotation about a transverse horizontal rotation axis parallel to the rotation axis of said back wheels and upwardly and forwardly spaced from said last-named rotation axis, the rotation axis of said

driving rings being spaced from the rotation axis of said back wheels by a distance which is less than the diameter of said rings and back wheels, said rings being located on the outside of the respective back wheels and overlapping the latter;

(d) a driving gear fixed to, and co-axial with, each driving ring; and

(e) transmission means drivingly interconnecting said main gear and said driving gear for rotation of said gears in the same direction.

4,274,651

WHEELCHAIR

Hubert H. Dumont, 2543 Lincoln Ave., Miami, Fla. 33133

Filed Aug. 9, 1979, Ser. No. 65,182

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **18 Claims**

1. A hand-propelled wheelchair for transporting persons, such as paraplegics and patients, in a sitting position, comprising:

a frame assembly having a pair of generally upright side frames, a back frame including a generally upright back support and a seat extending between and connecting said side frame;

a plurality of wheels operatively connected to said frame assembly for traveling upon a surface such as a ramp, said wheels including a pair of front wheels and a pair of rear wheels, each of said rear wheels having a diameter substantially greater than each of said front wheels; and

manual drive means operatively connected to said frame assembly for manually driving at least one of said rear wheels and for substantially preventing said rear wheel from rolling backwards while climbing said ramp, said manual drive means including:

a driven sprocket operatively connected to one of said rear wheels, said driven sprocket and said rear wheel rotating together about a common axis of rotation,

a drive sprocket for driving said driven sprocket,

a flexible chain connecting said drive sprocket to said driven sprocket,

a rotatable hand crank positioned adjacent one of said side frames at a location for permitting the person in the wheelchair to comfortably rotate said crank, said hand crank having an arm, a cam integrally connected to one end of said arm, and a handle connected to the other end of said arm for rotating said cam integrally with said arm, and

clutch means responsive to said cam for drivingly connecting said hand crank to said drive sprocket,

said cam being moveable by said handle from a drive position for cammingly engaging said clutch means to drive said rear wheel, to a neutral free-wheeling position spaced from said clutch means for permitting said rear wheel to coast.

4,274,652

STRUCTURE FOR ATTACHING AN IMPLEMENT TO AN OFFSET-TYPE TRACTOR

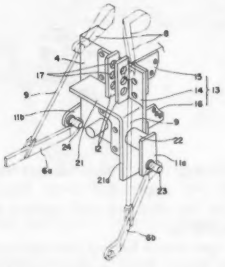
Masayori Kajino, Osaka; Takashi Yoshii, Sakai, and Tomeaki Tama, Hashimoto, all of Japan, assignors to Kubota, Ltd., Naniwa, Japan

Filed Jul. 23, 1979, Ser. No. 59,621

Claims priority, application Japan, Jul. 31, 1978, 53-105902

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—460 A **7 Claims**



1. In an offset-type tractor having a vertical, longitudinal center plane, and a transmission case disposed offset to one lateral side of said center plane, the improvement comprising means for mounting a three point implement hitch to said transmission case, said hitch including a top link and first and second, laterally spaced lower links, said mounting means comprising: a mounting base assembly detachably mounted to the rear of said transmission case; a plate fixed to said base assembly and projecting rearwardly therefrom; an arm having one end fixed to said plate and a second end projecting laterally from said tractor; a first bracket having an upper end fixed to said second end of said arm, and a lower end; means for pivotally mounting said first lower link to said lower end of said first bracket; a second bracket fixed to said base assembly on said one lateral side of said center plane; means for pivotally mounting said second lower link to said second bracket; an upper bracket mounted on said base assembly; and means for pivotally mounting said upper link to said upper bracket.

4,274,653

SAFETY SKI BINDING

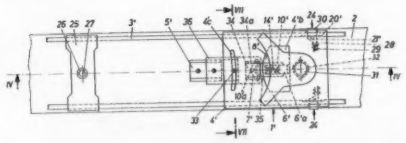
Alois Himmetsberger, and Heinz Wittmann, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Division of Ser. No. 896,234, Apr. 13, 1978, Pat. No. 4,190,264. This application Nov. 5, 1979, Ser. No. 91,447

Claims priority, application Austria, Apr. 15, 1977, 2635/77

Int. Cl.³ A63C *9/081*

U.S. Cl. 280—618 **9 Claims**



1. A safety ski binding comprising a pivotally supported sole plate provided adjacent a front end thereof with a jaw plate having a holding jaw pivotally supported for movement about an axis which is perpendicular with respect to an upper surface of a ski, said sole plate being maintained in a centered position at said front end by means of a locking mechanism which is released upon exceeding a predetermined torque, the improvement comprising wherein said locking mechanism has a mounting plate secured to said ski, said jaw plate having means defin-

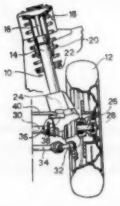
ing a recess therein, the axis of said recess extending parallel to the longitudinal axis of said sole plate, slide piece means slidably mounted in said recess for reciprocal movement therein, said slide piece means having first connecting means thereon, said holding jaw having extension means thereon with second connecting means operatively connected to said first connecting means for reciprocal movement capability with said slide piece means, said first and second connecting means operatively effecting a locking of said holding jaw in a fixed position on said jaw plate by urging said slide piece means to a position within said recess, and means responsive to a pivotal movement of said sole plate for effecting a movement of said slide piece means out of said recess to thereby unlock said holding jaw from said jaw plate to permit a pivotal movement of said holding jaw on said jaw plate.

4,274,654

STRUT FOR MACPHERSON-TYPE SUSPENSIONS FOR MOTOR-VEHICLES

Giuseppe Travaglio, Via U. Foscolo 4, Asti, Italy

Filed Feb. 11, 1980, Ser. No. 120,852
Int. Cl.³ B60G *11/58*
U.S. Cl. 280—668 **23 Claims**



1. In a strut for MacPherson-type suspensions for motor vehicles, of the type comprising an upper tubular member of sheet metal which forms the cylinder of a telescopic shock absorber, and a sheet metal housing having upper wall with a circular aperture, a lower wall with a hole for the attachment of one of the parts of a ball-and-socket joint of a suspension wishbone, a lateral end wall defining a flange for the attachment of a bearing bush or bearing spindle and a static part of a wheel brake, and a pair of opposing faces, a lower portion of the tubular member being engaged in the circular aperture of the upper wall of the housing and fixed to the housing by welding; the improvement therewith: wherein an additional reinforcing member of sheet metal is welded to the housing to define a supplementary wall adjacent to the upper wall of the housing, the supplementary wall having a circular aperture aligned with and spaced from the circular aperture of the upper wall, and wherein the lower portion of the tubular member is engaged with a close fit into said two aligned apertures and is fixed by welding to an edge of at least one of the apertures.

4,274,655

RESILIENT MOUNT FOR MACPHERSON STRUT

Frederick E. Lederman, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

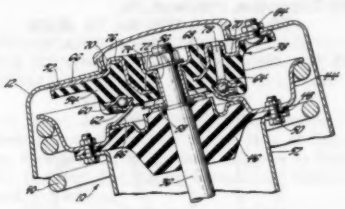
Filed Oct. 29, 1979, Ser. No. 88,838
Int. Cl.³ B60G *11/42*
U.S. Cl. 280—688 **4 Claims**

1. A resilient mount for the upper end of a vehicle suspension strut comprising a shock absorber having an outer casing and a piston rod extending out of its upper end, and a coil spring surrounding the shock absorber and supported at its lower end by a spring plate attached to the outer casing, comprising:

an annular mounting plate for securing the resilient mount to vehicle support structure bonded to an upper surface of an elastomeric ring for cushioning the loads of the coil spring as well as the loads of the shock absorber during suspension jounce and rebound,

an upper race ring bonded to a lower surface of the elastomeric ring and spaced from a cup-shaped central portion of the annular mounting plate embedded in the elastomeric ring,

thrust bearing means for rotatably supporting the upper end of the coil spring comprising the upper race ring bonded to the elastomeric ring, and a complement of bearing



elements and a lower race ring retained in assembly with the elastomeric ring by integral flexible lips at the lower end of the elastomeric ring which engage the lower race ring to seal the inner and outer ends of the thrust bearing means, and

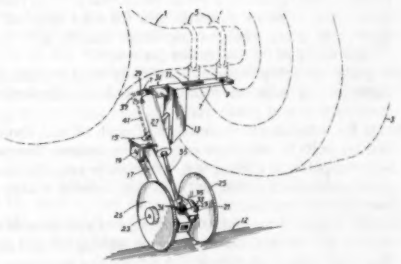
a central sleeve secured to the elastomeric ring for attaching the end of the piston rod of the shock absorber having an enlarged head disposed inside of the cup-shaped central portion of the annular mounting plate with a portion of the elastomeric ring disposed therebetween.

4,274,656

APPARATUS FOR PREVENTING VEHICLES FROM SLIPPING SIDEWAYS AND GOING OUT OF CONTROL UNDER SNOW AND ICE CONDITIONS

Earney R. Warren, Fordland, Mo., assignor to Customized Components Co., Springfield, Mo.

Filed Jul. 26, 1979, Ser. No. 60,777
Int. Cl.³ B60R *27/00*
U.S. Cl. 280—757 **7 Claims**



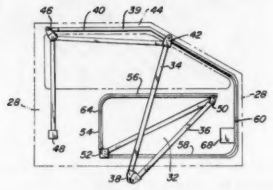
1. Apparatus for preventing vehicles from slipping sideways on slick road surfaces comprising a freely rotatable disc structure having a shaft parallel to the axis of the vehicle wheels and a pair of separate discrete discs mounted in spaced relation with each other on the respective end portions of said shaft to define between them a radially deep circumferential space and each having a single metal platelike circumferential edge capable of cutting into pavement ice and the like, support structure including a mounting element arranged for securement to an upsprung portion of a vehicle and an arm extending rearwardly from said element, a pivotal connection located at the forward end of said arm on an axis parallel to the axis of the vehicle wheels, means rotatably mounting said shaft on the rear end portion of said arm, said discs being positioned on

opposite sides of said arm, and selectively actuatable means for extending and retracting said arm comprising a fluid cylinder and piston assembly connected at one end to said mounting element and at its other end to said arm.

4,274,657
VEHICLE PASSIVE OCCUPANT RESTRAINING SYSTEM

Richard F. Johnson, Bloomfield Hills, and John W. Wiers, Washington, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 21, 1979, Ser. No. 40,656
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—803 **7 Claims**



6. An automatic belt restraint system for use in a motor vehicle of the type having a passenger compartment which includes doors having a metal frame around a window opening therein, said vehicle doors having a forward edge connected to the vehicle body by a hinged connection, said belt restraining system comprising:

a shoulder and a lap belt for restraining an occupant in said vehicle;

a first end of said shoulder and lap belts attached to the body of said vehicle inboard of a seat;

a shoulder and lap belt drive assembly located on said door of said vehicle;

said drive assembly including a single loop guide track having a horizontal section set along the upper portion of the metal frame of said door above said window for positioning said shoulder belt, the forward edge of said door, the lower portion of said door along a central area of said door then vertically upward at a point located to correctly position said lap belt and a final horizontal portion running under said window towards said forward edge of said door, said guide track having bends therein with an included angle of 90 degrees or greater;

said guide assembly includes a helically wire wound drive cable having sufficient rigidity to be driven forward and backward in said guide track;

means for attaching a second end of each of said shoulder and lap belts to said drive cable for movement therewith;

a motor capable of driving a gear which in turn drives said guide cable, said motor and said gear located within said door of said vehicle; and

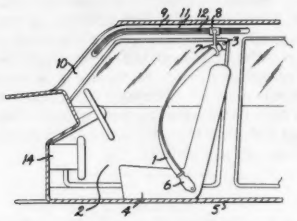
a switch mounted on said forward edge of said door of said vehicle for sensing the entering or leaving of said occupant, said switch actuating said cable drive to release said restraining belts when said occupant desires to exit said vehicle and engage said system when said occupant closes said door of said vehicle.

4,274,658
VEHICLE OCCUPANT RESTRAINT SYSTEM

Juichiro Takata, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Jun. 25, 1979, Ser. No. 51,969
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **7 Claims**

1. A vehicle occupant restraint system for restraining an occupant of a seat located adjacent a door that is hinged along the front edge comprising a shoulder belt having an outboard end secured to an anchor affixed to the upper rear portion of the door, an intermediate portion extending down and in across the seat to the inboard rear portion of the seat and an inboard end portion wound onto an emergency locking retractor; an elongated guide rail mounted on the edge of the roof to rock within a predetermined range in a generally vertical plane

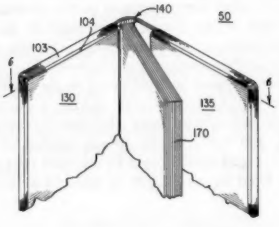


about generally its center of gravity and extending generally coextensively with the upper edge of the door; a slider received by the guide rail for sliding movement therealong; and a belt guide ring movably attached to the slider and receiving the intermediate portion of the belt for movement therethrough.

4,274,659
ADJUSTABLE BOOK COVER

Joseph J. D'Ambrosio, 13970 Peach Grove St., Sherman Oaks, Calif. 91423

Filed Jul. 6, 1979, Ser. No. 55,687
Int. Cl.³ B42D *3/00*
U.S. Cl. 281—34 **9 Claims**



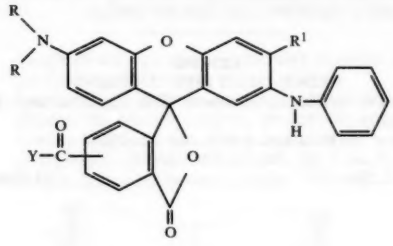
1. A protective and adjustable book cover for paperback books and magazines and the like, said cover comprising two complimentary sized cover sections, each of said cover sections having opposed and spaced apart rigid plies of substantially the same size connected along three edges thereof forming a pocket with the remaining edges open, means maintaining said rigid plies spaced apart a distance sufficient to receive therebetween a cover of an associated book or magazine, a spine connecting said complimentary pocket shaped cover sections and having a transverse dimension substantially coextensive with the open edges of said cover sections, and means resiliently connecting said spine to at least one of said cover sections to provide an adjustable rigid book cover for paperback books or magazines of various thicknesses and size.

4,274,660
CARBONLESS DUPLICATING AND MARKING SYSTEMS

Paul J. Schmidt, Sharonville, and William Mo-Wei Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed May 14, 1979, Ser. No. 39,017
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **10 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system comprising a support sheet coated with a layer containing as a color-forming substance a 2-anilino-3-R^1-6-(R)$_2$amino-5′/6′-Y-carbonylfluoran of the formula



wherein:

R represents a non-tertiary C_1 to C_4 alkyl;

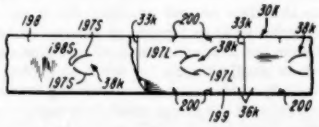
R^1 represents hydrogen or a non-tertiary C_1 to C_4 alkyl; and

Y represents OR^2 in which R^2 represents hydrogen, a non-tertiary C_1 to C_{18} alkyl, benzyl, alkali metal cation or ammonium cation.

4,274,661
COMPOSITE WEB OF PRESSURE SENSITIVE LABELS

William A. Jenkins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 607,317, Aug. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 475,730, Jun. 3, 1974, and a continuation-in-part of Ser. No. 475,728, Jun. 3, 1974, which is a division of Ser. No. 366,919, Jun. 4, 1973, abandoned, which is a division of Ser. No. 206,061, Dec. 8, 1971, Pat. No. 3,783,083, which is a continuation-in-part of Ser. No. 155,740, Jun. 23, 1971, abandoned, said Ser. No. 475,730, is a division of Ser. No. 366,919, Jun. 4, 1973, abandoned. This application Sep. 26, 1979, Ser. No. 79,001
The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.
Int. Cl.³ G09F *3/10*
U.S. Cl. 283—21 **4 Claims**

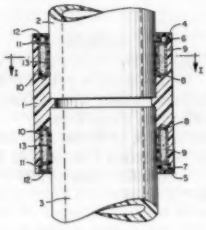


1. A composite label web for use in a label dispensing apparatus having a toothed driver and a label separating delaminator, the composite label web comprising an elongated carrier web of flexible supporting material, a series of longitudinally disposed labels on the carrier web, pressure sensitive adhesive on the labels and releasably securing each label to the carrier web, a series of longitudinally spaced groups of cuts in the carrier web and located under the labels, each group of cuts including spaced converging bar cuts defining in the carrier web a flap portion attached to an overlying label by the pressure sensitive adhesive, each flap portion being integrally connected to the carrier web at a leading location by a narrow frangible portion defined between closely spaced portions of the converging bar cuts, each frangible portion having sufficient strength to maintain the flap portion in the plane of the carrier web when the carrier web is pulled around the delaminator by the toothed driver and to effect peeling the corresponding flap portion from the pressure sensitive adhesive on the overlying label, and each frangible portion having sufficient weakness to rupture in response to engagement of the corresponding flap portion by the toothed driver.

4,274,662
PYROTECHNICAL WELDING SLEEVE CONNECTOR FOR THE JOINING OF MOLDED COMPONENTS, ESPECIALLY PIPES, OF A THERMOPLASTIC SYNTHETIC RESIN

Willem J. de Groot, Jona, Switzerland; Horst Penner, Furth; Irene Schmied, Nuremberg, both of Fed. Rep. of Germany, and Peter Weber, Jona, Switzerland, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany and Geberit AG, Rapperswil, Switzerland

Filed Dec. 28, 1979, Ser. No. 107,861
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1978, 2856895
Int. Cl.³ F16L *47/02*
U.S. Cl. 285—21 **10 Claims**



1. A welding sleeve connector for the connection of molded components made of a thermoplastic synthetic resin which comprises a thermoplastic sleeve, a plurality of pyrotechnical heating charges for producing welding energy, each charge being individually enclosed in a casing of a solid material arranged in the sleeve, and said heating charges being separately positioned in the sleeve at predetermined spacing from each other over the circumference of the sleeve, and means for igniting said heating charges.

4,274,663
MULTIPLE WALL DRILL PIPE

Floyd W. Becker, and Richard R. Regimbal, both of Calgary, Canada, assignors to Drill Systems, Inc., Calgary, Canada

Filed Mar. 27, 1978, Ser. No. 890,068
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—24 **29 Claims**

1. A section of multiple wall pipe for use in a drill pipe string, comprising:

an outer pipe member;

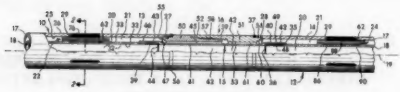
an inner pipe member mounted within the outer pipe member; and

releasable connecting means for holding the inner pipe member and the outer pipe member in fixed axial relationship under force loads applied in use during a drilling operation while enabling relative rotary movement between the inner pipe member and the outer pipe member in use during the drilling operation to relieve torsional stress and for permitting the removal of the inner pipe member by relative axial displacement relative to the outer pipe member by application of an axially directed force in excess of

the axially directed force loads applied to the length of pipe in use during a drilling operation; said connecting means comprising:

resiliently compressible ring means for connecting said outer pipe member to said inner pipe member;

outer groove means located in fixed relationship relative to



said outer pipe member, for receiving and releasably holding an outer peripheral portion of said resiliently compressible ring means; and

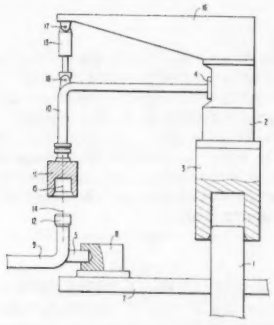
inner groove means located in fixed relationship relative to said inner pipe member in axial alignment with said outer groove means for receiving and holding an inner peripheral portion of said resiliently compressible ring means.

4,274,664

PIPE JOINING DEVICE FOR UNDERSEAS PETROLEUM PIPELINE

Georges M. Thominet, Toulon, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Aug. 3, 1978, Ser. No. 930,836
Claims priority, application France, Aug. 5, 1977, 77 24269
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—24 **6 Claims**



1. A coupling apparatus for connecting a coupling pipe fixedly attached to a first structure to a second pipe means fixedly positioned in approximate prealignment with said coupling pipe and fixedly attached to a second structure, the coupling apparatus comprising: means to move said first and second structures relatively toward and away from one another;

an end of said coupling pipe remote from said first structure being displaceable;

support means for said coupling pipe in the region adjacent said first structure;

a first end part carried by said end of said coupling pipe remote from the first structure;

a second end part carried by the second pipe means;

one of said first and second end parts being a male member and the other being a female member, said male and female members engageable together to make a connection and having cooperating surfaces which cooperate to guide said first and second end parts if misaligned when offered to one another into alignment as said end parts engage;

relative movement of said first and second structures toward one another bringing said first and second end parts to a proximate relationship; and

means provided to complete the engagement of the first end part and the second end part;

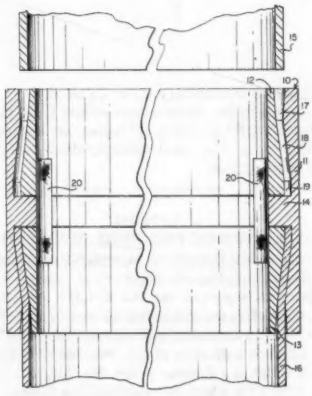
wherein said coupling pipe is curved and said means for completing the engagement of said end parts comprise a jack coupled between points spaced along the length of said coupling pipe between which points said coupling pipe is curved, said jack being operable upon completion of relative movement of said structures to move said first end part into engagement with said second end part by varying the configuration of said first and second end parts towards and away from one another.

4,274,665

WEDGE-TIGHT PIPE COUPLING

Richard O. Marsh, Jr., 703 Standard Life Bldg., Pittsburgh, Pa. 15222

Filed Apr. 2, 1979, Ser. No. 26,087
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—177 **14 Claims**



1. A force fit coupling for so joining two sections of plain end pipe and pipe pile as to form a high tensile strength joint, said coupling comprising a retaining sleeve having a radial projection thereon and two separate wedge sleeves positioned in concentric coaxial relation to the retaining sleeve at opposite sides of the radial projection, each of said wedge sleeves having an outer conical surface which matches a corresponding inner conical surface on said retaining sleeve and abuts said radial projection so as to provide an annular socket therebetween wherein said sleeves are engaged by a pipe and pipe pile that is driven axially therein by force to deform said pipe sections radially, said wedge sleeves serving not only to deform pipe sections when driven axially into said socket but also to strengthen them against redeformation by pull-out forces.

4,274,666

LOCK FOR SLIDING WINDOWS AND DOORS

Almo E. Peck, 56 W. Sunset Avenue, Salt Lake City, Utah 84115

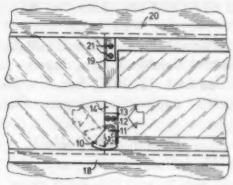
Filed Nov. 5, 1979, Ser. No. 91,045
Int. Cl.³ E05C *3/04*
U.S. Cl. 292—257 **4 Claims**

1. Locking means for sliding windows and doors, comprising:

rotatable eccentric cam means for mounting on a window sash adjacent a window frame, said cam means having a generally arc-shaped contact face for engaging the win-

dow frame, said face having a leading edge and a trailing edge, with the radius between said face and the pivot point of said cam means gradually increasing from the leading edge to the trailing edge, so as to apply increasing pressure on the frame as the window is attempted to be opened;

mounting means for mounting on the sash, and having means



on which said cam means is rotatably mounted at said pivot point; and

a pressure block for fixedly mounting on the window sash adjacent the window frame on the opposite side of the window from said cam means, so that when said cam means applies pressure on the frame, the frame transfers the pressure to said mounting block.

4,274,667

BUMPER FOR MOTOR VEHICLES

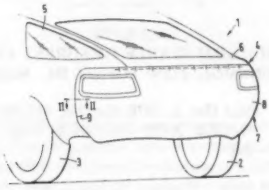
Peter Dietmar, Stuttgart-Feuerbach, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,028

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825838

Int. Cl.³ B60R *19/00*

U.S. Cl. 293—102 **12 Claims**



1. A bumper for motor vehicles having a rigid support and a covering made of elastic material, said material being attachable to the body of a motor vehicle by means of a fastening section and by means of boltable fastening elements, characterized by the fact that the covering has at least two arms extending from an edge of the covering that is adjacent the body in use, whereby a first of said arms is located within the outside contour of the covering and includes the fastening section and a section of said arms forms an extension of the outside contour of the covering and further characterized by the fact that the first arm is connected with a U-shaped section having a cross-arm connecting a pair of legs, said cross-arm being elastic and forming a flexible hinge-like member.

4,274,668

PROTECTIVE BAND, IN PARTICULAR A BUMPER COVER FOR AUTOMOBILES

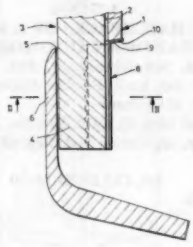
Hans Kluss, Wolfsburg, and Janez Lampic, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg and Peguform-Werke GmbH, Bötzingen, both of, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,521

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815263

Int. Cl.³ B60R *13/04*

U.S. Cl. 293—142 **3 Claims**



1. A protective band, such as a bumper cover for automobiles, has a profiled component provided with a longitudinal groove on one outer surface for receiving a resilient element useful as a decorative strip, the ends of the entire element project through clearances in an end wall of the profiled component to an area under pocket-like covers integral with the profiled component, the cross-section of which area exceeds that of the groove and the end wall extends across the entire cross section of the profiled component, said ends are protected against sliding out of said area, characterized in that the longitudinal groove is undercut and the element is provided with a longitudinal resilient web means for forming a clip connection with the groove, the element has a cross section which is constant over its entire length and exceeds the cross section of the web means, and safety clamps are applied to the ends of the element for forming stops directed perpendicular to the element, said clamps being designed in such a manner that the ends of the element provided with them can be introduced through the clearances in the end walls into the area under the pocket-like covers and yet form stops against said end walls preventing the element from sliding out of the area.

4,274,669

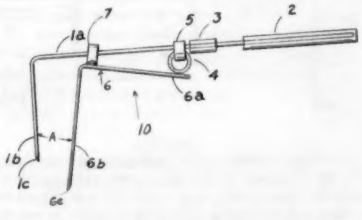
PICK-UP TOOL FOR OBJECTS

Curtis Williams, 200 Center Plz., Tulsa, Okla. 74119

Filed Oct. 22, 1979, Ser. No. 86,824

Int. Cl.³ B65G *7/12*

U.S. Cl. 294—16 **5 Claims**



1. A pick-up tool for objects and comprising first and second gripping elements movable in directions away from and

toward each other for alternate engagement and disengagement with the object and slidably and pivotally secured together, wedge means slidably secured to the first of said gripping elements and selectively engageable with the second of said gripping elements for adjusting the distance and angular disposition therebetween, one of said gripping elements comprising a substantially L-shaped member having one leg thereof substantially flat to provide a first gripping jaw, and the other of said gripping elements being substantially L-shaped providing a pair of mutually perpendicular plates, one of said plates being a press plate engageable by said wedge means and the other of said plates being a second gripping jaw.

4,274,670

PIVOTABLE HATCHBACK FOR A STREAMLINED REAR OF AN AUTOMOBILE

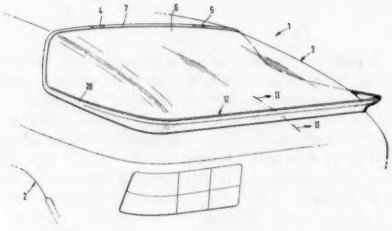
Gregor Pitzmann, Schwieberdingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,845

Claims priority, application Fed. Rep. of Germany, May 10, 1978, 781407[U]

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **11 Claims**



10. A pivotal hatchback for a streamlined rear of an automobile, said hatchback comprising a glass pane, a frame circumferentially bordering said glass pane, and an aerodynamic drag reducing device provided in a rear section of the hatchback, said device comprising an elastic body extending across the width of the hatchback and continuing around the corners of the hatchback and tapering along forwardly extending lateral parts of the frame.

4,274,671

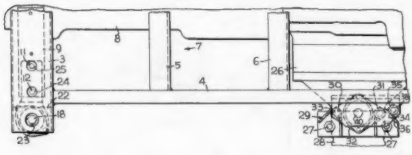
DEVICE FOR REPLACING RESILIENT ISOLATORS

Michael L. Slosiarek, Greenfield, and William J. Zajichek, New Berlin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 12, 1979, Ser. No. 102,653

Int. Cl.³ B62D *23/00*

U.S. Cl. 296—190 **10 Claims**



1. A device for replacing an isolator on the vehicle comprising, a vehicle chassis, a resiliently supported member, at least one resilient isolator mounted on said vehicle chassis resiliently supporting said resiliently supported member, means defining a threaded opening in said resiliently supported member axially aligned with a pressure surface on said vehicle chassis, a bolt for reception in said threaded opening to press against said pressure surface for raising said resiliently supported member from said vehicle chassis and thereby allow removing of said resilient isolator from said chassis and supported member and replacing said isolator with another.

4,274,672

SUNSHADE SYSTEM IN SLIDING ROOF SYSTEM OF VEHICLE

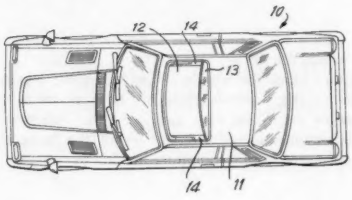
Hiroshi Kuroda, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,173

Claims priority, application Japan, Oct. 16, 1978, 53-141828[U]

Int. Cl.³ B62D *25/06*

U.S. Cl. 296—216 **7 Claims**



1. A sliding roof construction for a vehicle comprising a slide roof member formed of a transparent material and which is movable forwardly and rearwardly to close and open an opening provided in the roof of the vehicle, a sunshade slidably mounted beneath said transparent slide roof member for selectively covering said opening, said sunshade being made of an opaque material, guide rail means on said roof at the lateral edges of said opening for slidably supporting said slide roof member at its opposite lateral sides, said guide rail means each having first and second guide grooves spaced laterally of each other, said slide roof member including front stays slidably supported in laterally inner ones of said guide grooves and rear stays slidably supported in laterally outer ones of said guide grooves, and slider means on said sunshade slidably engaged in said laterally inner guide grooves and which are engaged by said front stays of said slide roof member, said slider means being positioned rearwards of said front stays and displaced thereby as the slide roof member is opened, so that the sunshade is concurrently opened.

4,274,673

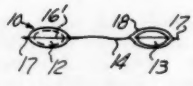
DISPOSABLE ADJUSTABLE HEADREST AND PILLOW

Harry P. Kifferstein, 27250 Harvard Rd., Southfield, Mich. 48076

Filed Oct. 2, 1978, Ser. No. 947,501

Int. Cl.³ A47C *7/46;* **A47G** *9/00*

U.S. Cl. 297—220 **12 Claims**



1. A disposable adjustable headrest comprising in combination a rectangular pillowcase closed on its two longer sides and on one of its shorter sides, said pillowcase being open on one of its shorter sides, and two relatively narrow elongated separate resilient pillow units, said pillow units being removably and

independently disposed freely in said pillowcase normally substantially parallel to each other, one of said pillow units being manually displaceable relative to the other from proximate thereto to substantially away therefrom, one of said pillow units being positioned proximate the shorter closed side of said pillowcase and extending along said one shorter closed side between the two other closed longer sides of said pillowcase, and said pillowcase having a length substantially greater than the combined width of said pillow units and a width snuggly accepting said pillow units when said one of said pillow units is positioned proximate said one shorter closed side of said pillowcase and the other of said pillow units is disposed substantially parallel to said one of said pillow units, whereby the other of said pillow units is accessible through said open shorter side of said pillowcase for manual adjustment proximate to and away from said one of said pillow units.

4,274,674

SAFETY SEAT FOR TRANSPORTING A CHILD IN A MOTOR VEHICLE

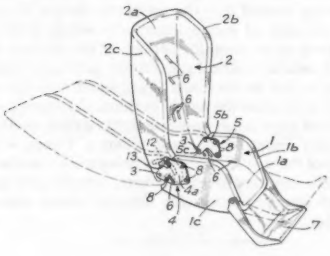
Bernard Deloustal, Anglet, France, assignor to Baby Relax, Anglet, France

Filed Sep. 10, 1979, Ser. No. 73,704

Claims priority, application France, Sep. 11, 1978, 78 26041; Sep. 21, 1978, 78 27039; Jun. 13, 1979, 79 15156

Int. Cl.³ A47C *1/026, 1/027;* **A47D** *11/00*

U.S. Cl. 297—250 **8 Claims**



1. A reclinable safety seat for supporting and holding a child, designed to be fitted in a motor vehicle by means of two straps adapated to be respectively stretched between a fastening point provided in the vehicle and an anchoring point found on the seat, the end of each strap being provided with a tab for its attachment to the anchoring point, the back-rest and the seating portion, which comprise side walls, being hinged together by one of their ends, wherein the back-rest and the seating portion are each constituted by a half-shell having the overall shape of a trough with thick side walls, wherein the said anchoring point is situated on one of the said walls adjacent the hinged connection, and wherein the said attachment tab comprises rigid means for coupling the corresponding side wall of the back-rest to the corresponding side wall of the seating portion for at least two maximum and minium reclining positions of the seat, the said tab being fastenable to the said anchoring point only when the said coupling means are operated and lock the seat in at least the said two reclining positions.

4,274,675

SHAFT-SINKING APPARATUS WITH MILLING HEAD AND CENTRAL WORM CONVEYOR

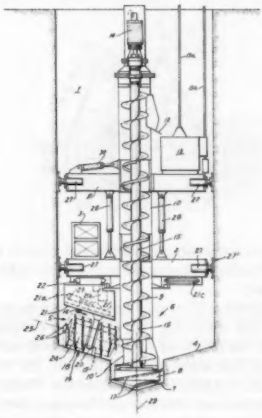
Friedrich W. Paurat, Kasselweg 29, Wesel, and Roland Paurat, Lippestrasse 32, Voerde 2, both of Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,162

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837348; Nov. 8, 1978, 2848349

Int. Cl.³ E21D *1/03*

U.S. Cl. 299—31 **14 Claims**



1. An apparatus for sinking a shaft which comprises:

a main platform adapted to be positioned in an excavation above a floor to be cut away to sink a shaft;

a pilot bore unit mounted on said main platform and provided with:

a pilot bore head adapted to sink a pilot bore centrally in said floor, and

a worm conveyor connected to said head and extending upwardly therefrom through said platform for conveying detritus from the pilot bore formed by said head away therefrom, said worm conveyor including an upwardly extending tube opening at said head and a worm rotatable in said tube for elevating detritus therethrough, said worm being adjacent said head;

a milling drum mounted on said main platform laterally over and above said head and provided internally with a drive for milling away said floor around said pilot bore and transferring detritus to said conveyor, said head being formed with a cutting drum and a multiplicity of cutters arranged in a conveyor flight to feed detritus to said tube;

means on said main platform or orbiting said milling drum around said pilot bore unit; and

a loading platform spaced above said main platform and provided with transport means for carrying detritus away from said excavation, said worm conveyor reaching upwardly towards the loading platform for transferring detritus to said transport means, said milling drum being formed with teeth disposed in a worm pattern inducing detritus to move to said pilot bore.

4,274,676

APPARATUS FOR REMOVING MATERIAL

Nimrod T. Chapel, 3804 Green Oaks Way, Edmond, Okla. 73034

Filed Jan. 18, 1980, Ser. No. 113,192

Int. Cl.³ B24B *27/00*

U.S. Cl. 299—64 **4 Claims**

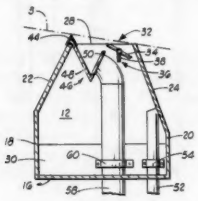
1. An apparatus for removing asbestos from a surface and for preventing the removed asbestos particles from escaping into

the ambient environment by using a coagulant, said apparatus comprising:

a housing having a cavity extending into said housing from an opening formed in the wall of said housing;

spray means disposed within said housing, for applying a coating of the coagulant to the asbestos to be removed;

a rotatable cutter member having a blade extending therefrom, said cutter member rotatably connected to said housing so that the blade extends through the opening when said member rotates for scraping the surface to



thereby loosen the asbestos contained therein and mounting means having a biasing element for yieldably receiving said member;

a trough disposed within said housing and disposed within the cavity for receiving the loosened, coagulant-coated asbestos as it is removed from the scraped surface;

suction means, connected to said trough, for withdrawing the loosened, coagulant-coated asbestos therefrom; and

a resilient member attached to said housing along one edge of the opening and extending outwardly of said housing for operative association with said surface.

4,274,677

MINERAL CUTTER PICK ARRANGEMENT

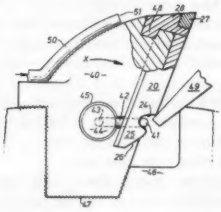
Sidney E. Proctor, Amersham, England, assignor to Pars Engineering Company Limited, London, England

Continuation-in-part of Ser. No. 817,155, Jul. 20, 1977, abandoned. This application May 22, 1979, Ser. No. 41,484

Claims priority, application United Kingdom, Jul. 23, 1976, 30908/76; Dec. 7, 1976, 51077/76; May 11, 1977, 19856/77; May 26, 1978, 23129/78

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—92 **20 Claims**



1. A mineral cutter pick arrangement comprising a cutter pick holder having an elongated leading edge and an upper surface, a cutter pick comprising a body member having a leading edge, a rear surface, an upper end and a bottom end, the widest dimension of the cutter pick body member transverse to the forward direction of movement of the cutter pick at least adjacent the upper end being greater than the corresponding dimension of the cutter pick holder, the cutter pick body member being formed at said upper end with a top member having a rearmost surface and an under-surface, said top member extending rearwardly of the leading end of said body member, the rearmost surface of said top member being at an angle which diverges from the normal to the under-surface of the said top member to abut against a surface of the pick holder which conforms to the shape of said rearmost surface, the upper surface of said holder and the lower surface of said top member being provided with interengaging means enabling the cutter pick body member to be located on the holder with said rearmost surface in abutment with said conforming surface of said holder and a cutter tip secured within a recess with said top member along the leading edge thereof.

4,274,678

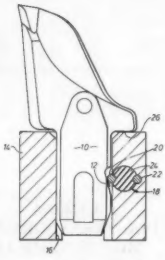
SOCKETED BOSS HAVING MEANS FOR RETAINING A TOOL SHANK

Frederick Herridge, Buckinghamshire, England, assignor to Austin Hoy and Company Limited, High Wycombe, England

Filed Jul. 11, 1979, Ser. No. 56,726

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—92 **10 Claims**



1. A boss having a socket therein for the reception of a shank of a tool and a locking arrangement for retaining the shank, the locking arrangement comprising a plug received in a bore extending through the boss transversely of the socket the arrangement being such that the bore intersects the socket along one side thereof, the plug comprising a body of a resilient material having bonded into the periphery thereof at spaced locations a plurality of metallic members which form semi-cylindrical protrusions from the surface of the resilient body, one of which semi-cylindrical protrusions protrudes from the bore into the socket for frictional engagement with the shank of the tool so as to retain the tool in position, the other(s) of the semi-cylindrical protrusions being disposed within semi-cylindrical extension means of the bore within said boss, and the arrangement of the metallic members being such that the plug may be axially removed from the bore, rotated and axially re-inserted to change the metallic member which protrudes into the socket.

4,274,679

WHEEL COVER LOCKING MEANS

Thomas F. Brinson, Lake Park, and Jack A. Bayman, Valdosta, both of Ga., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,336

Int. Cl.³ B60B *7/00*

U.S. Cl. 301—37 AT **14 Claims**

1. A locking device for securing a wheel cover to a vehicle wheel rim said wheel cover having a generally curcular mounting plate including retention means at the peripheral portions thereof for mounting said wheel cover on said wheel rim and having a center cap mounted to said mounting plate, said device comprising in combination:

a first threaded fastener;

means for mounting said first threaded fastener to said wheel rim wherein the mounted fastener projects axially outwardly and through an opening in said mounting plate of said wheel cover;

a tubular member mounted to and depending axially in-

wardly from an access opening in said center cap of said wheel cover coaxially with said fastener; and,

a second threaded fastener slidably mounted in said tubular member and captured therein between said mounting

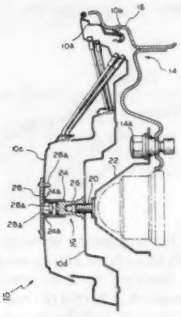


plate and said center cap for unengaged movement toward and away from said first threaded fastener and being threadedly engageable therewith to limit the axially outward movement of said mounting plate with respect to said wheel rim.

4,274,680

SELECTIVE ANTI-SPIN BRAKE SYSTEM

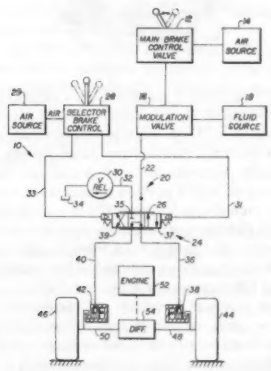
Alfred W. Sieving, Venedy, and James M. Stanley, Oreana, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00597, § 371 Date Aug. 13, 1979, § 102(e) Date Aug. 13, 1979, PCT Pub. No. WO81/00384, PCT Pub. Date Feb. 19, 1981

This PCT application filed Aug. 13, 1979, Ser. No. 108,971

Int. Cl.³ B60T *13/22*

U.S. Cl. 303—6 A **6 Claims**



1. In a vehicle fluid brake system (**10**) having right and left spring applied, fluid pressure released wheel brakes (**38,42**), a source of fluid pressure (**18**), and a brake valve (**16**) for modulating said source (**18**) and delivering a controlled pressure signal (**20**) for simultaneous control of said brakes (**38,42**), the improvement comprising:

valve means (**24**) for modulating said controlled pressure signal (**20**) and independently controlling the degree of engagement of either brake.

4,274,681

PRESSURE CONTROL VALVE ASSEMBLY FOR A FLUID BRAKE SYSTEM

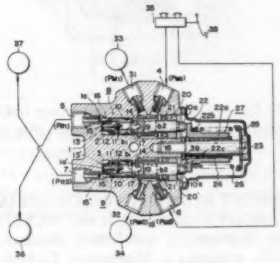
Yoshitaka Tsuda, Tokyo; Kaoru Sodeyama, Kokubunji, and Naomasa Tsunada, Hachioji, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 13, 1980, Ser. No. 129,854

Claims priority, application Japan, Mar. 20, 1979, 54-35927[U]

Int. Cl.³ B60T *13/00*

U.S. Cl. 303—6 C **2 Claims**



1. In a pressure control valve assembly for an automotive split brake system having a master cylinder and a brake cylinder, the pressure control valve assembly comprising a housing having a stepped bore and a wall section defining part of said bore, a concavity formed in said wall section, a shock absorbing abutment member in said concavity, a differential piston within said bore, said piston being abuttingly engageable at its one end portion with said shock absorbing member upon movement into its extreme position and having a hollow section, biasing means for urging said piston into said extreme position and including a spring seat movable toward and away from said housing, and valve means mounted in the hollow section of said piston, said piston being exposed to the fluid pressures in the master cylinder and the brake cylinder and assuming a position governed by said fluid pressures for selectively opening and closing said valve means such that the rate of the pressure increases in said brake cylinder to the pressure increase in said master cylinder is increased beyond a predetermined switchover point pressure,

said abutment member being formed with a fluid passage providing constant communication between said stepped bore and said concavity.

4,274,682

SELF-LAPPING SEAL FOR TRACK CHAIN

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 938,551, Aug. 31, 1978. This application Jun. 15, 1979, Ser. No. 48,899

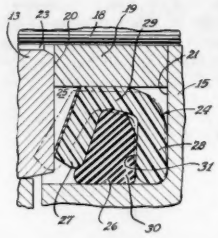
Int. Cl.³ B62D *55/20*

U.S. Cl. 305—11 **35 Claims**

23. A seal assembly (**33**) for sealing two relatively movable members comprising:

seal means (**24**) having at least one sealing surface (**34**) adapted to sealingly engage said one of said movable members, said sealing surface (**34**) further including lapping means (**32**) for lapping said one of said movable members as a result of relative movement between said

sealing surface (**34**) and said one of said movable members to provide an improved seal therebetween; and



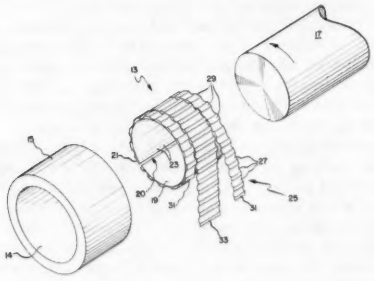
means (**30**) for urging said sealing surface (**34**) into sealing engagement with said one of said movable members.

4,274,683

SUPPORT ELEMENT FOR COMPLIANT HYDRODYNAMIC JOURNAL BEARINGS

Stanley Gray, Skaneateles, and Bharat Bhushan, Watervliet, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,263
Int. Cl.[3] **F16C** *32/06, 17/02*
U.S. Cl. 308—9 **23 Claims**



1. A compliant hydrodynamic fluid film journal bearing comprising:

a journal bearing sleeve and a rotatable shaft defining therebetween a gap;

a resilient support element positioned in said gap and connected to said sleeve, said element having a series of raised compliant resilient projections;

a flexible bearing sheet connected to said sleeve and overlying said support element and being supported thereby;

said support element having a primary zone, and having two end zones at different axial positions along said sleeve from said primary zone, said zones each including at least one circumferentially extending strip running generally parallel to the direction of relative movement of said shaft;

said end zones having portions which are compliant independently of said primary zone and each other, and having a compliance different from that of said primary zone.

4,274,684

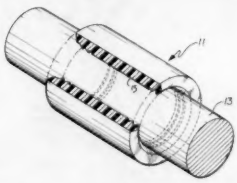
PERMANENTLY LUBRICATED BEARING

Steven E. Richfield, 10032-31st Ave. NE., Seattle, Wash. 98125

Filed Mar. 24, 1978, Ser. No. 889,656
Int. Cl.[3] **F16C** *33/72*
U.S. Cl. 308—36.1 **28 Claims**

1. A dripless bearing, comprising:

load-carrying, substantially rigid bearing means having a bearing surface, in or on which bearing means a shaft moves relative thereto, wherein frictional contact between the bearing surface and the shaft is minimized by bearing lubricant, said bearing means having at least one recess in the bearing surface which opens onto an end boundary of said bearing means, wherein the spacial volume of said recess is larger than the volume of bearing



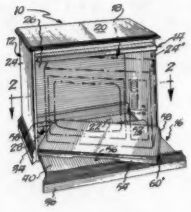
lubricant in said bearing means between the bearing surface and the shaft, said recess having such a configuration that the bearing lubricant tends to remain in the bearing means during operation, wherein the recess is defined by a boundary wall which is radially roughened to assist in retrieval of bearing lubricant back into the bearing, and which terminates in an abrupt edge at the end boundary.

4,274,685

ENTERTAINMENT CENTER CABINET

Bruce E. Bradshaw, Jamestown, N.Y., assignor to Jamestown Lounge Company, a Division of Arbor Industries, Inc., Jamestown, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,208
Int. Cl.[3] **A47B** *81/06;* **A47F** *3/10*
U.S. Cl. 312—7 TV **4 Claims**



1. A cabinet comprising in combination a cabinet frame, said cabinet frame including in part cabinet top, bottom, opposite side and rear panels, said top, bottom and opposite side panels defining a front opening, said bottom panel having upper and lower horizontally disposed surfaces; a closure sized for removably covering an upper portion of said front opening; and a slide assembly including a horizontally disposed substantially rectangular base slidably supported by said cabinet frame for horizontal movements through said front opening between a cabinet frame inserted position in which it lies essentially coextensive with and adjacent said bottom panel upper surface and a fully extended position in which it is essentially removed from within the confines of said cabinet frame, said base having upper and lower horizontally disposed surfaces, a cabinet front rail depending from and at least coextensive with a front marginal edge of said base and cooperating with said closure to close said front opening when said base is in said inserted position, said front rail vertically extending at least to said bottom panel lower surface when said base is in said inserted position, base anti-tilt means in the form of caster means depending from said base lower surface adjacent said front rail for movement with said base and said front rail to support said base against tilting as the same is moved from its inserted position, whereat said caster means is located horizontally within the confines of said cabinet front opening, to its fully extended position, whereat said caster means is removed from the confines of said cabinet, said front rail having a vertical dimension below said base lower surface of sufficient extent

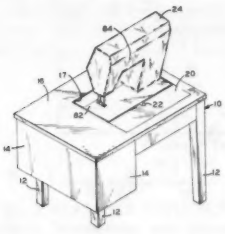
with respect to that of said caster means to substantially hide said caster means from view, a swivel mechanism carried by said base upper surface to upstand centrally thereof and an entertainment unit supporting shelf supported by said swivel mechanism to reside horizontally above and in essential alignment with said base and for rotational movements about a vertically disposed axis.

4,274,686

FREE ARM SEWING MACHINE CABINET MOUNTING MECHANISM

Ralph B. White, 2526 Castle Dr., Fort Wayne, Ind. 46816

Filed Jul. 11, 1979, Ser. No. 56,547
Int. Cl.[3] A47B *81/00*
U.S. Cl. 312—27 **29 Claims**



1. In a sewing machine cabinet having a top with an opening therein, a mounting mechanism for supporting a free arm sewing machine selectively in an upper use position, a lower use position, and a storage position, said mechanism comprising:

an upper support arm pivotally connected to and depending from said cabinet top,

a lower support arm pivotally connected to said upper support arm,

a sewing machine support platform pivotally connected to said lower support arm,

lower use lock means for releasably locking said platform in a lower use position, and

upper use lock means for releasably locking said platform in an upper use position, the upper use position of said platform being generally above the lower use position thereof,

said mechanism being movable to a storage position wherein the platform is positioned such that a sewing machine operably attached thereto would be disposed below the cabinet top.

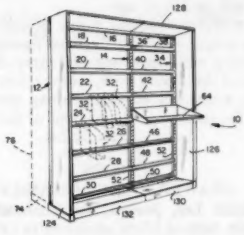
4,274,687

SUSPENSION FILE ASSEMBLY

Richard A. Bayles, 8 Idlewild Park Dr., Cornwall-on-Hudson, N.Y. 12520, and Philip Shuster, Monsey, N.Y., assignors to Richard A. Bayles, Cornwall-on-Hudson, N.Y.

Filed May 14, 1979, Ser. No. 38,892
Int. Cl.[3] A47B *45/00*; A47G *29/02*
U.S. Cl. 312—205 **10 Claims**

1. A suspension file assembly comprising a plurality of spaced apart leg assemblies, each including an upright vertical member supported by a horizontal base member, a plurality of horizontal suspension members extending between said vertical members and having connecting means for removably mounting said suspension members on said vertical members, whereby said horizontal suspension members are supported by said leg assemblies, a plurality of record storage bins adapted to be suspended from said horizontal suspension members, said horizontal base members being rigidly affixed to the bottom end of the respective vertical members and projecting perpendicularly from the forward face thereof only in a forward direction to support the weight of said bins suspended on the forward face of said horizontal suspension members, a plurality of auxiliary horizontal base members, and means including a tongue-and-slot coupling for selectively and removably mounting said auxiliary members on the lower end of the respective vertical members with said auxiliary members being



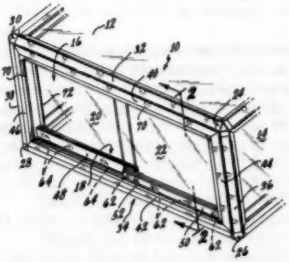
aligned with the respective horizontal base member and projecting perpendicularly from the rear face of said vertical members in a direction opposite to said horizontal base members, whereby to support the weight of bins suspended on the rear face of said horizontal suspension members.

4,274,688

SLIDING DOOR STRUCTURE

Ralf G. Zacky, 4491 Deanwood Dr., Woodland Hills, Calif. 91364

Filed Nov. 13, 1979, Ser. No. 93,159
Int. Cl.[3] F16B *12/00*; A47F *3/00*; E05D *15/06*
U.S. Cl. 312—304 **11 Claims**



1. A sliding door structure for use with a display case including

an outer frame located within a particular plane including at least four tubular members each having substantially the same cross-section and interconnected at end portions by joints to form the outer frame, and with the four tubular members located within the particular plane,

an inner frame located within the particular plane including at least four unitary moldings extending along and complementary to the tubular members to form the inner frame, and with the inner frame located within the outer frame and within the particular plane,

the unitary moldings each including a groove extending along the length of the molding and with the groove having a configuration to receive a portion of the outer surface of the tubular member and with the grooves providing for the inner frame interlocked within the outer frame,

a pair of sliding doors, each formed by a sliding member and a panel member, and with the sliding member including a top portion for receiving and supporting the panel member and a bottom portion for receiving and supporting guide members,

the bottom molding including a pair of upwardly extending support portions each extending along the length of the molding and parallel to each other, and with the support portions each receiving and supporting the bottom por-

tion of the sliding member, and with the guides providing for an ease of movement of the sliding doors, and wherein the bottom molding includes additional outer upstanding wall members forming an outer configuration for the bottom molding matching the outer configuration of the top and side moldings, and

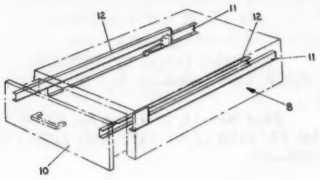
the upper molding including a pair of channels extending along the length of the molding and parallel to each other for receiving and supporting the upper end of the panel members of the sliding door, and the side moldings each including a channel extending along the length of the molding for receiving side portions of the sliding doors.

4,274,689

DRAWER GLIDE ASSEMBLY

Robert J. Vander Ley, Jenison, and Frederick G. Sherman, Grand Rapids, both of Mich., assignors to Leslie Metal Arts Company, Grand Rapids, Mich.

Filed Sep. 10, 1979, Ser. No. 73,705
Int. Cl.[3] A47B *88/00*; F16C *21/00*
U.S. Cl. 312—333 **11 Claims**



1. A drawer glide assembly comprising:

first and second longitudinally extending channel members, each of said channel members including a central web and a pair of spaced parallel side webs perpendicular to the plane of said central web, said channel members being disposed in a vertical arrangement with the lower side web of said first channel member adjacent the upper side web of said second channel member and the central webs in a laterally spaced parallel relationship;

a mounting bracket secured to and extending from each of said channel members at an end thereof;

a roller rotatably mounted on each mounting bracket and extending into the guide channel defined by said side webs of an opposing track member;

a lever arm pivotably mounted on said mounting bracket secured to said first channel member;

a stop member disposed on the lever arm and in sliding engagement with the lower side web of said second channel member; and

stop means on the lower side web of said second channel member for engaging said stop member so as to limit relative longitudinal displacement of said channel members;

wherein said stop member pivots downwardly with respect to said lower side web of said second channel member upon alignment of the stop member and said stop means.

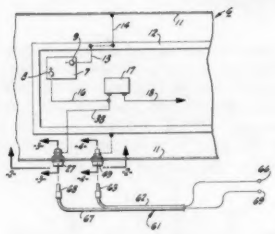
4,274,690

JUMPER CABLE ARRANGEMENT FOR A VEHICLE

Jerry D. Hargett, and Alfred C. Nash, both of Hilmar, Calif., assignors to N & H Manufacturing, Inc., Turlock, Calif.

Filed Aug. 17, 1979, Ser. No. 67,559
Int. Cl.[3] H01R *13/44*
U.S. Cl. 339—10 **1 Claim**

1. A jumper cable arrangement for a vehicle having an electrically conducting body panel and a storage battery with two poles comprising means defining a first aperture in said body panel and defining a second aperture in said body panel; a first conducting bushing adapted to extend through said first aperture and having a first head and a stem with a relatively large bore therein; an insulating first sleeve adapted to slip over said first stem and to abut said head, said first sleeve having an internal first groove therein adjacent said first head; a first insulating washer disposed in said first groove and abutting said first head; means for retaining said first washer in said first groove; an insulating second washer around said first bushing and abutting said body panel; means interengaging with said first stem and said second washer for holding said first sleeve against said body panel; means for electrically connecting said first conducting bushing to one pole of said storage battery; a second conducting bushing adapted to extend through said second aperture and having a second head and a second stem



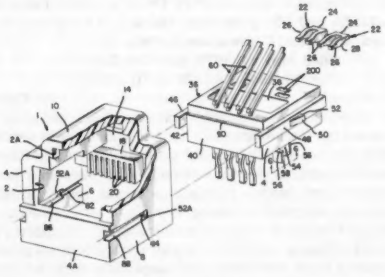
and a relatively small bore therein; an insulating second sleeve adapted to slip over said second stem and to abut said second head, said second sleeve having an internal second groove therein; an insulating third washer in said second groove; means for retaining said third washer in said second groove; conducting means interengaging with said second stem and in electrical contact with said body panel for holding said second sleeve against said body panel; means for electrically connecting said body panel to the other pole of said storage battery; and a conductor having a first plug of substantially a relatively large size and adapted to fit into said relatively large bore in said first bushing and having a second plug of substantially a relatively small size and adapted to fit said relatively small bore in said second bushing.

4,274,691

MODULAR JACK

Lynn W. Abernethy, Advance, and Elvert S. Watts, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 966,693, Dec. 5, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,859
Int. Cl.[3] H01R *31/08, 13/54*
U.S. Cl. 339—19 **7 Claims**



1. In a jack type connector having a molded base and a molded cover cooperating to form an internal cavity and a plurality of elongated spring contacts mounted in said base and projecting into said cavity for engaging electrically the electri-

cal terminals of a plug type connector when the same is pluggably inserted into said cavity, the improvement comprising:

said contacts having electrical lead portions depending outwardly of said base for pluggable connection in a circuit board which mounts said base,

said contacts having resilient free ends projecting outwardly of said base and into said cavity,

said cover includes a first end wall having an opening communicating with said cavity and profiled to compliment the profile of said plug type connector,

a second end wall of said cover having a base receiving opening,

side walls of said cover connecting said end walls,

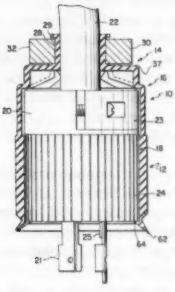
projecting rails along sides of said base slidably received along grooves in said cover side walls and extending from said base receiving opening toward said first end wall, said rails projecting from an end of said base and impinging sides of said first end wall.

4,274,692

TORSIONALLY FLEXIBLE CONNECTOR COVER

Ernest G. Hoffman, Middlefield, and Michael J. D'Amato, North Haven, both of Conn., assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Sep. 18, 1979, Ser. No. 76,793
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—60 M **5 Claims**



1. A protective cover of elastomeric material for use in combination with an electrical connector portion securable to an electrical cable, the connector portion of the type having a plurality of electrically conductive connector elements, a non-conductive holder for supporting the connector elements for cooperative engagement with connector elements in a mating connector portion, means for releasably locking the mating connector portions in their engaged relationship, and a generally cylindrical sleeve rotatable about the longitudinal axis thereof for operating the means for locking, the cover comprising:

a gripping sleeve receivable over and frictionally engagable with the surface of said rotatable member;

a cable clamping portion on the cover; and

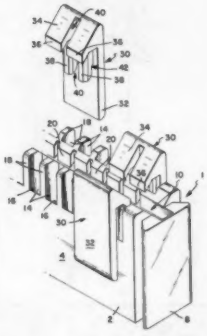
a torsionally flexible portion comprising a series of resilient pleats connected between and joining said gripping sleeve and said cable clamping portion, permitting relative rotation about said longitudinal axis of said member between said member and said cable clamping portion, each of said pleats having a substantially inverted V-shaped cross section and the apices of said pleats extending radially from the longitudinal axis of said sleeve.

4,274,693

SNAP ON CARD STRAIGHTENER

Robert F. Cobaugh, Elizabethtown, and David W. Mendenhall, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1979, Ser. No. 100,668
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—65 **8 Claims**



5. A card guide adapted for snap on mounting to a card edge connector provided with a card receiving cavity and electrical contacts mounted in channels along opposite sides of said cavity, comprising:

a first leg adapted for engaging an external wall of said connector,

a second leg adapted to overlie said connector and having a card supporting surface adapted to engage and support a card during insertion into said card edge connector, and

a pair of jaws on said first leg adapted to enter selected ones of said channels,

said jaws resiliently engaging therebetween a wall separating said selected channels,

said jaws having hook portions hooked over lip sections of said wall.

4,274,694

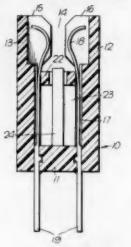
ELECTRICAL CONNECTOR HAVING A PLURALITY OF IN-LINE CONTACTS

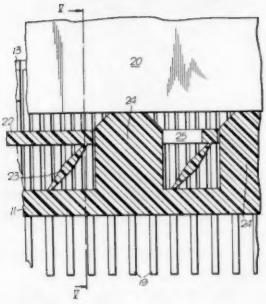
Russell A. Leather, Perth, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed May 31, 1979, Ser. No. 44,320
Claims priority, application United Kingdom, May 31, 1978, 25471/78
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—74 R **9 Claims**

1. An electrical connector which includes a housing of electrically-insulating material having a base and two side walls together defining a longitudinal slot from which extend a plurality of transverse openings, a plurality of electrically-conducting contact members located one in each of at least some of the transverse openings such that a contact portion of each contact member extends into the longitudinal slot, and control means located within the longitudinal slot and comprising a rigid bar member capable of limited movement along the slot and supported in such a manner that such movement causes a

change in the distance between the bar member and the bottom of the longitudinal slot, each contact member being so shaped





that movement of the bar member causes movement of each contact member into or out of its transverse opening.

4,274,695

DEVICE FOR ELECTRICALLY CONNECTING SPARK PLUG TO HIGH-VOLTAGE CABLE

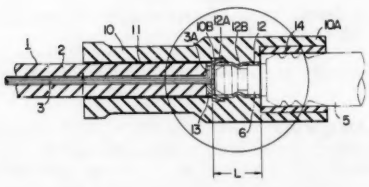
Yukitsugu Fukumori, Yokohama; Masazumi Sone, Chigasaki; Hiromitsu Nagae, Katsuta; Masami Shida, Katsuta; Tsutomu Kooriyama, Katsuta, and Koji Harada, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Company, Limited, both of Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,088

Claims priority, application Japan, Feb. 3, 1978, 53-10461; Mar. 24, 1978, 53-32987; Aug. 2, 1978, 53-93572; Oct. 13, 1978, 53-125069

Int. Cl.³ H01R *13/514*

U.S. Cl. 339—97 S **25 Claims**



1. An electrical connecting device comprising connecting means disconnectedably connectable with a spark plug for electrically connecting the spark plug to a high-voltage cable supplying a high voltage to the spark plug from an ignition coil, wherein a maximum length of said connecting means in an axial direction of said spark plug is selected to be not longer than 25 mm, and said connecting means is integrally combined with said high-voltage cable by a reinforcing means.

4,274,696

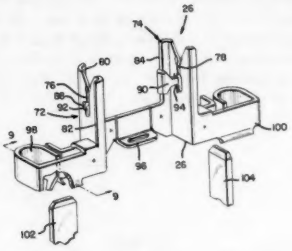
ELECTRICAL CONNECTING DEVICE FOR WIRING SYSTEMS

William B. Long, Camp Hill, and John A. Zimmerman, Jr., Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 23, 1979, Ser. No. 96,964

Int. Cl.³ H01R *4/24, 13/58*

U.S. Cl. 339—103 R **2 Claims**



1. An electrical device capable of terminating a wiring system of the type formed by three or four conductor cables enclosed in an insulating jacket, said device comprising:

a generally rectangular housing of rigid insulating material having at least one access opening in a forward face and a rearwardly directed cavity;

at least two terminals mounted in said cavity, each said terminal having at least one rearwardly directed conductor plate each with an insulation displacing slot therein, a recess in a sidewall of said slot toward the bottom of each said slot, a tine extending from an outer edge of said plate and being folded back upon itself to lie in a respective recess, said tine biting into a respective conductor at an acute angle thereby acting as a strain relief for said conductor;

a cable receiving cover member profiled to mate with said housing to enclose said cavity, said cavity and said cover member being polarized, said cover member having means to latchingly secure it to said housing and defining a cable passage with pusher means therein for each conductor of said cable; and

mounting means to detachably secure said device in an aperture of a wall or the like.

4,274,697

GROUND PIN BLADE AND ELECTRICAL CONNECTOR PLUG

Donald M. Dodge, Huntington Beach, and Ernest Dietz, Torrance, both of Calif., assignors to Pacific Electricord Company, Gardena, Calif.

Filed Nov. 13, 1979, Ser. No. 93,740

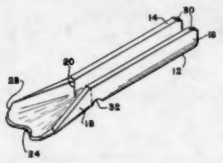
Int. Cl.³ H01R *13/04*

U.S. Cl. 339—103 R **13 Claims**

1. A ground pin blade for a molded electrical plug, said blade comprising:

an elongated channel having an arcuate bottom, and further having side walls which are parallel throughout a first channel portion extending from the outer end of said channel to a transition section, the upper edges of said side walls progressively flaring laterally outwardly throughout a second channel portion extending from said transition section to the inner end of said channel, the included angle defined between said side walls at said inner end being between 60 and 120 degrees, the length of said second channel portion being between 30 and 40 percent

of the length of said channel; and a wire conductor aperture extending through said bottom of said channel and located somewhere along the length of an aperture region which includes that part of said first channel portion



adjacent said transition section, and which further includes that part of said second channel portion adjacent said transition section and constituting no more than 35 percent of the length of said second channel portion.

4,274,698

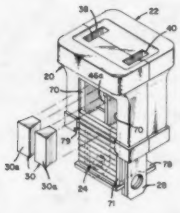
FUSED ELECTRIC PLUG WITH SNAP-FITTED BODY PARTS

Joseph M. Ahroni, 1631-16th Ave. #413, Seattle, Wash. 98119

Filed Feb. 21, 1979, Ser. No. 13,319

Int. Cl.[3] H01R *13/514, 33/04;* **H01H** *85/02*

U.S. Cl. 339—147 P **6 Claims**



1. A fused plug comprising:

a plug body formed by front and rear mating shells, said body having top and bottom end faces interconnected by side faces and front and rear faces, said rear shell being formed with a fuse recess area having a closed back wall, said front shell having a front access to said fuse recess area,

a pair of electrical conductor means in said body having respective exposed terminal portions at the upper end portion of said fuse recess area,

a pair of conductor prong members projecting through the bottom end of said body for insertion into a socket and presenting respective exposed contact members at the bottom end portion of said fuse recess area,

fuse means providing a pair of fuses in said fuse recess area, each fuse having a fuse body and respective elongated fuse links of thin, electrically conductive strip material secured flat against the fuse body and arranged to engage and connect respective of said terminal portions to respective of the prong contact members, said fuse means being adapted to pass through said front access,

door means on said front shell for covering said front access when in a closed position and for giving access to said fuses when in an open position, said door means having a sliding interfit with said plug body and having inwardly projecting means engaging the top of the fuse means when the door means is in closed position, and

interfitting means at the back of said front shell and at the front of said rear shell integral with the shells whereby said shells can be fitted together for assembly.

4,274,699

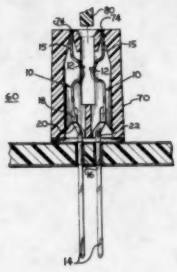
PRESS FIT TERMINAL WITH SPRING ARM CONTACT FOR EDGECARD CONNECTOR

Kenneth J. Keim, Lewisberry, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 900,486, Apr. 27, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,552

Int. Cl.[3] H01R *13/40*

U.S. Cl. 339—176 MP **8 Claims**



1. An elongated electrical terminal having a contact at each end and a deformable mounting portion therebetween, said mounting portion comprising:

a generally cylindrical body having symmetrically opposed generally oval-shaped voids impressed therein, the major axes of said oval voids extending parallel to the longitudinal axis of said body, the body having a generally bow-tie shaped cross section with convex surfaces at its ends and symmetrically-opposed, dish-shaped impressions formed in its sides to define a reduced center portion in said cross section, said mounting portion upon press fitting into a round circuit board aperture having the convex surfaces at each end of the bow-tied shaped cross section in intimate contact with the inside surface of said round aperture and said reduced center being plastically deformed.

4,274,700

LOW COST ELECTRICAL CONNECTOR

Josef Keglewitsch, Addison, and Daniel P. Vladic, Berwyn, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 841,272, Oct. 12, 1977, abandoned. This application Feb. 21, 1979, Ser. No. 14,004

Int. Cl.[3] H01R *13/52*

U.S. Cl. 339—192 R **29 Claims**

1. An electrical connector comprising:

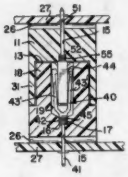
a dielectric body member including a main body portion having first and second exterior surfaces adapted to be positioned in cooperative juxtaposition with associated members having electrically conductive elements, said main body portion having a plurality of spaced-apart, contact-receiving apertures extending therethrough between said surfaces;

each aperture having a narrow cavity region extending inwardly from said first exterior surface, a shoulder cavity region wider than said narrow cavity region and extend-

ing inwardly from said narrow cavity region toward said second exterior surface, and a wide cavity region wider than said shoulder cavity region and extending from said shoulder cavity region to said second exterior surface;

said shoulder cavity region communicating with said narrow cavity region and cooperating therewith to define an offset shoulder surface disposed substantially normal to the longitudinal axis of said narrow cavity region; and

a plurality of electrical contacts disposed in respective ones of said apertures, each contact including a terminal portion, a shoulder portion and an active contact portion, each said terminal portion being shaped complementary to and disposed snugly in said narrow cavity region of said aperture and extending outwardly beyond said first exterior surface for connection to another electrically conductive element;



each said shoulder portion being shaped complementary to and disposed in a water-tight fit in said shoulder cavity region of said aperture in mating engagement with said shoulder surface, each said shoulder portion having at least one ridge on opposite faces thereof isolated from said narrow cavity region and said wide cavity region and extending in a direction substantially normal to the longitudinal axis of said aperture;

said active contact portion extending into said wide cavity region for connection to another electrical component;

whereby said snug fit of said terminal portion, said water-tight fit of said shoulder portion, said offset shoulder surface and said ridge together define a substantially irregular and constricted path through said aperture to thereby provide an essentially liquid impervious juncture which prevents seepage to said active contact portion.

4,274,701

LOCKABLE CONTACT SOCKET FOR INSERTION INTO A PLUG CONNECTOR

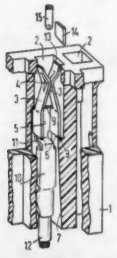
Johann Bannert, Traubing, and Guenter Nagel, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,013

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713894

Int. Cl.³ H01R *13/428*

U.S. Cl. 339—217 S **1 Claim**



1. An electrical assembly comprisinng a plug connector casing having a spring chamber with one end being arranged to receive a connecting pin,

a contact socket in said spring chamber and having contact arms extending toward said one end of the spring chamber and having first ends providing respective contact portions for engaging a connecting pin inserted into said spring chamber through said one end thereof,

said contact arms having second ends (6) with a resilient transverse element (5) extending therebetween at one side of the spring chamber to form a U-shaped spring configuration, the forward edge of the transverse element (5) providing a stop for determining the insertion depth of the contact socket into the spring chamber, and the second end of one of the contact arms providing a rearwardly directed locking edge for releasably retaining the contact socket against removal from the spring chamber,

the plug connector casing including a locking means (8) lying behind said locking edge of the second end of the one of said contact arms, and a further locking means (9) lying in front of said forward edge of said transverse element (5), and

means providing clearance along the side of the spring chamber confronting said one of said contact arms for accommodating insertion of a blade through the one end of the spring chamber for the purpose of deflecting said locking edge of said one contact arm out of engagement with said locking means (8) to enable removal of the contact socket from the spring chamber,

the contact socket having an elastic element (11) and an actual connecting region (10), the spring arms and the transverse element (5) being connected with the region (10) via said elastic element (11),

said resilient transverse element of said U-shaped spring configuration consisting essentially of a rectilinear generally planar strip (5) of metal having a rear margin parallel to said forward edge, and having lateral margins defining a longitudinal dimension of said strip (5), said rear margin of said strip (5) lying generally in a common plane with said locking edge which common plane is perpendicular to said strip (5), said second ends (6) being integral with and contiguous to the respective lateral margins of said rectilinear strip (5) over the entire extent of said second ends (6) such that the locking edge is contiguous to and directly merges with said rear margin of said strip without any gap therebetween, said elastic element (11) being of S configuration and comprising a first rectilinear strip portion integral with the rear margin of said strip (5) and generally coplanar therewith, said first strip portion extending rearwardly from the generally common plane of said locking edge and said rear margin,

said elastic element (11) further comprising a second rectilinear strip portion joining integrally with said first strip portion and forming a first bend therewith which first bend is parallel with said rear margin of said strip (5),

said second strip portion having a longitudinal extent such that the second strip portion overlies a major proportion of a height dimension to which the locking edge extends from said strip (5) which height dimension is perpendicular to said strip (5),

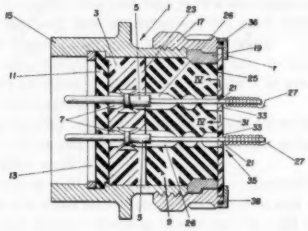
said elastic element (11) further comprising a third strip portion joining with the second strip portion and forming a second bend therewith which second bend is substantially parallel to said first bend and is of a configuration such that the third strip portion extends rearwardly and is offset from the first strip portion in the direction perpendicular to said strip (5) by approximately the height dimension to which said locking edge extends from said strip (5),

said connecting region (10) being connected with said third strip portion, said connecting region (10) being connected with said second strip portion only via said second bend, and being connected with said first strip portion only via said second bend, said second strip portion, and said first bend.

4,274,702
ANTIROTATION MEANS FOR WIRE WRAP ELECTRICAL CONNECTOR ASSEMBLIES

Joseph M. Buck, Binghamton; David O. Gallusser, Oneonta, and David L. Frear, Binghamton, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 14, 1979, Ser. No. 94,138
Int. Cl.³ H01R *4/14, 13/52*
U.S. Cl. 339—217 R **4 Claims**



1. In an electrical connector assembly having a plurality of electrical contacts and a dielectric insert member associated with a moisture sealing grommet member, each of said members having forward and rearward faces and each including a plurality of passages extending between their respective said faces, the rearward face of the insert abutting the forward face of the grommet and the passages of one member being associated with the passages of the other member such that the passages of each are axially aligned, each of the contacts being mounted within one respective passage of the insert and each having a non-circular terminating end portion extending from the rearward face of the grommet, said non-circular terminating end portions being adapted to electrically terminate a wire wrapped therearound, the improvement comprising:

means for separately preventing each individual contact from rotating relative to its associated passages, the rotation preventing means comprising:

a locking template secured to the rear of the grommet, said template having a plurality of apertures extending therethrough and through which the contacts will pass, each of the apertures being in register with the associated passages and each having at least two locking grooves cooperating therewith;

a plurality of locking elements of dielectric material, each of said locking elements being shaped to fit within one of the apertures in the locking template and each having at least two locking lugs extending outwardly therefrom and adapted to be received within the locking grooves of the template to prevent the locking element from rotating relative to its associated groove, each locking element being provided with a non-circular bore through which the non-circular terminating end portion of the contact extends and thereby hold the contact against rotation upon wrapping of the terminal with a conductive connecting wire; and

at least one unlocking slot cooperating with each of said apertures.

4,274,703
HIGH-EFFICIENCY SYMMETRICAL SCANNING OPTICS

Tibor Fisli, Los Altos Hills, Calif., assignor to Xerox Corporation, Stamford, Conn.

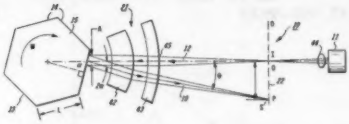
Continuation-in-part of Ser. No. 821,006, Aug. 1, 1977, abandoned. This application Oct. 29, 1979, Ser. No. 88,804
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **6 Claims**

1. A flying spot optical scanning system for sweeping an optical scanning spot across an imaging surface, said system comprising the combination of

a source for supplying a light beam

a beam scanning element having a plurality of reflective facets circumferentially distributed in a tangential plane about an axis of rotation;

means for rotating said scanning element on said axis of rotation, whereby said facets serially intercept and reflect said light beam;

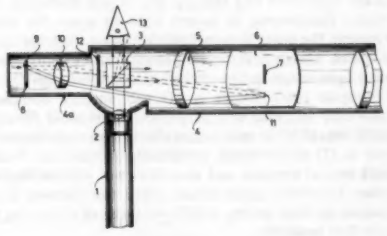


lens means optically interposed between said source and said surface for serially focusing the light beam onto successive ones of said facets and for refocusing light reflected from said facets onto said surface, said lens means being substantially symmetrical about an optical axis which is essentially normal to said axis of rotation, said light beam underfilling and remaining fully seated on the facet upon which it is focused while the reflected light is scanned through a predetermined scan angle.

4,274,704
ENDOSCOPES INCORPORATING A BEAM SPLITTER

Jürgen Zobel, Bretten-Sprantal, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,073
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 7825297[U]
Int. Cl.³ G02B *27/32, 23/08*
U.S. Cl. 350—10 **1 Claim**



1. In an endoscope of the kind incorporating a beam splitter for simultaneous direct observation and joint observation, and also incorporating for joint observation an articulated optical system substantially larger in diameter than the endoscope shaft, or for alternative connection of a film or television camera to the last tube of the articulated optical system, which optical system includes within a first tube, fixed to the endoscope, both an achromatic lens and a field lens, the improvement in that an opaque plate (8) and related lens (10) are mounted in a tubular member relative to the axis of the endoscope (1) opposite to the first tube member of said articulated optical system, said opaque plate having a small opening radially spaced from the center of said tubular member arranged to pass light to said related lens, by which a spot or image of the opening is transmitted via, or adjacent the side of, said beam splitter to said achromatic lens (5) and in juxtaposition with the reflected image, reflected by the beam splitter, of the object of the endoscope in a common plane in said field lens (6), and said light spot then being guided in juxtaposition with the object image via the lens system of said articulated optical system to an eye piece of said articulated optical system so that at the eye

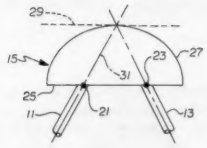
piece the real attitude of the object is denoted by the light spot juxtaposed thereto.

4,274,705

FIBEROPTIC-FED FLUID LEVEL SENSOR USING A HEMIELLIPSOIDAL OPTICAL ELEMENT

Glen E. Miller, Redondo, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 24, 1979, Ser. No. 78,214
Int. Cl.³ G02B *5/14*; G01N *21/85*
U.S. Cl. 350—96.15 **10 Claims**



1. A sensor apparatus useful in determining fluid level comprising:

an optically-transparent optical element having a convex hemiellipsoidal front surface, the boundary of the optical element encompassing the first and second foci of the front surface, such that (1) light entering said optical element through said first focus at substantially any angle, if reflected from the front surface of said optical element, exits through the second focus, and (2) light entering through the first focus impinges on the front surface at substantially the same angle of incidence substantially regardless of the angle at which the light entered through the first focus; and

first and second fiberoptic cable means connected to the optical element in a fixed relationship thereto, terminating at the respective foci thereof, one of said fiberoptic cable means functioning to permit light to enter the optical element, the other to receive light exiting from the optical element, said optical element being further configured so that light entering the optical element through the one fiberoptic cable means is (1) substantially completely internally reflected and exits through the other fiberoptic cable means when said optical element is in a first medium, and is (2) substantially completely transmitted through said optical element and thus does not exit through the other fiberoptic cable means when the element is in a second medium having a different index of refraction than said first medium.

4,274,706

WAVELENGTH MULTIPLEXER/DEMULTIPLEXER FOR OPTICAL CIRCUITS

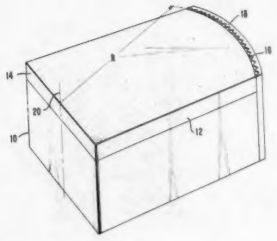
Gregory L. Tangonan, Oxnard, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 30, 1979, Ser. No. 71,323
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.19 **9 Claims**

1. A multimode wavelength selective beam coupler for optical circuits comprising:

(a) an optically transparent waveguide having sufficient thickness for multimode propagation and having first and second major surfaces, a planar input/output end surface and a focussing end surface both intersecting said first and second major surfaces, said focussing end surface being convex and cylindrical and having its axis of curvature perpendicular to said first and second major surfaces and within the plane of said input/output end surface, said focussing end surface constituting a means for imaging multimode light propagated thereto from said input/output end surface back onto said input/output end surface; and

(b) a reflective diffraction grating formed on a thin flexible material, said thin flexible material being affixed contiguously on said focussing end surface, said grating having lines substantially perpendicular to said first and second major surfaces, whereby an optical beam having a plurality of wavelength components propagating multimode from said input/output end surface to said focussing end surface is diffracted by said grating into a set of beams having angles dependent on said wavelength components and brought to a focus by said focussing end surface in the plane of said input/output end surface wherein each of said wavelength components forms a spatially separated image.

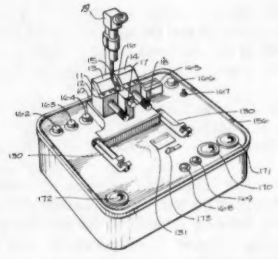


4,274,707

APPARATUS FOR FUSION SPLICING OF OPTICAL FIBERS

Grant K. Pacey, Nepean, Canada, and Jaroslav M. Hvezda, Playa Del Rey, Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 14, 1979, Ser. No. 48,669
Int. Cl.³ G02B *5/14*; B23K *9/00*
U.S. Cl. 350—96.20 **4 Claims**



1. Apparatus for fusion splicing of optical fibers, comprising:

a support housing;

a fiber gripping head on said support housing the gripping head including two fiber holding members spaced apart laterally to hold two fibers in end-to-end axial alignment with the fiber ends in opposition at a predetermined position between the holding members, the gripping head including a Vee groove extending longitudinally in the direction of the axes of said fibers, said holding members spaced apart along the Vee groove, said Vee groove having two levels, a first level for reception of coated portions of fibers, and a second, higher, level for reception of uncoated end portions of fibers, said first level in two portions spaced on either side of said second level;

each said fiber holding member comprising a finger pivotally mounted at a rear end on a rear part of the gripping

head and extending forward over said Vee groove, each finger including a first part for locating a coated portion of a fiber in a first level of said Vee groove and a second part for locating and resiliently holding an uncoated end portion of a fiber in a second level of said Vee groove, said second part comprising a laterally extending spring member having an end portion extending towards the Vee groove, the second parts of the fingers extending towards each other and said end portions adjacent to and on either side of said predetermined position;

means resiliently pivoting said fingers in a direction towards said Vee groove, and an extension on each finger for lifting the finger away from said Vee groove;

two electrodes spaced in a direction normal to said Vee groove, an electrode on each side of said Vee groove at said predetermined position;

means for supplying electrical power to said electrodes for formation of an arc therebetween for fusion splicing of opposed fiber ends;

control means in said support housing for controlling the supply of electrical power to said electrodes; and

means on said support housing for presetting said control means.

4,274,708

DEVICES FOR SPLICING OPTICAL FIBRES AND CABLES

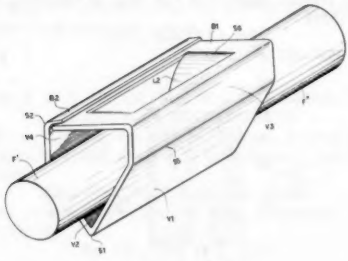
Giuseppe Cocito, S. Giusto Can. se Torino, and Leonardo Michetti, Almese-Torino, both of Italy, assignors to Cselt-Centro Studie Laboratori Telecommunication S.p.A., Torino, Italy

Filed May 5, 1978, Ser. No. 903,060

Claims priority, application Italy, May 10, 1977, 68043 A/77; Jul. 20, 1977, 68689 A/77; Jul. 20, 1977, 68690 A/77; Sep. 5, 1977, 68970 A/77

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.21 **18 Claims**



1. A device for the splicing of optical fibers, comprising:

an elongate channel member of constant cross-section forming a downwardly converging longitudinal bottom groove with opposite open ends for the insertion of respective fiber trunks to be joined together; and

a retaining member of sheet material fixedly positioned on said channel member and substantially longitudinally coextensive therewith, said retaining member being provided with a slot and with a pair of resilient formations extending from opposite boundaries of said slot toward said groove for engaging the inserted fiber trunks while being sufficiently separated to facilitate the introduction therebetween of bonding and refractive-index-matching material into said groove.

4,274,709

OPTICAL FIBER FOR TRANSMISSION

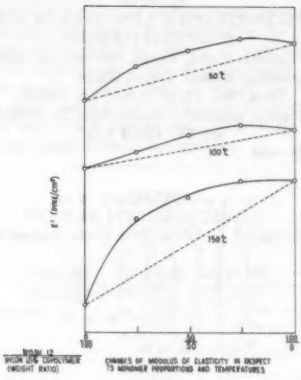
Sigeru Asai, Kawagoe, Japan, assignor to Daicel Ltd., Osaka, Japan

Filed Nov. 21, 1979, Ser. No. 96,278

Claims priority, application Japan, Nov. 30, 1978, 53-148210

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.34 **13 Claims**



1. An optical fiber for optical transmission comprising an optical fiber core for optical transmission, said core being covered with a coating layer consisting essentially of a mixture of (1) from 5 to 95 percent by weight of nylon **11** or nylon **12** and, correspondingly, (2) from 95 to 5 percent by weight of nylon copolymer of two or more different nylon-forming monomers selected from the group consisting of (a) lactams having 4 to 16 carbon atoms, (b) ω-amino carboxylic acids having 4 to 16 carbon atoms and (c) salts of alkylene diamines having 4 to 16 carbon atoms and alkylene dicarboxylic acids having 4 to 16 carbon atoms.

4,274,710

OPTICAL WAVE CIRCULATORS

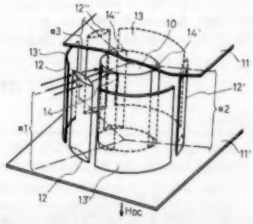
Tsukasa Nagao, 4-75, Mabori, Yokosuka-shi, Kanagawa-ken, Japan

Filed May 2, 1980, Ser. No. 145,896

Claims priority, application Japan, May 8, 1979, 54/55933

Int. Cl.³ G02B *27/00*

U.S. Cl. 350—375 **8 Claims**



1. An optical wave circulator comprising

a magneto-optic cylindrical structure made of magneto-optic material having optical anisotropy under biasing magnetic field to act given magneto-optic effects on signal light beam, said magnetic being optic structure being positioned on the common axis,

plural numbers of optical guiding couplers for guiding said light beam, each coupler being placed in rotational symmetry around said common axis,

said plural numbers of reflecting mirrors being counterposi-

tioned to said couplers in said rotational symmetry around said common axis,

two plates supporting said magneto-optic structure and said reflecting mirrors,

and means for magnetically biasing said magneto-optic structure in the direction parallel to said common axis.

4,274,711

BRIGHT PHOTOGRAPHIC LENS SYSTEM WITH REAR STOP DIAPHRAGM

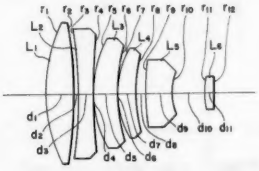
Hirohumi Matsuo, Asaka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,620

Claims priority, application Japan, Dec. 27, 1978, 53/163316

Int. Cl.³ G02B 9/62

U.S. Cl. 350—464 **3 Claims**



1. A lens system comprising front and rear lens groups, said front lens group comprising, in order from the object, a first positive lens L_1, a second negative lens L_2, a third positive lens L_3 and a fourth positive lens L_4, and said rear lens group comprising, in order from the object, a fifth negative lens L_5 and a sixth positive lens L_6, said lenses being characterized by:

Aperture 1:2.8, Overall Focal F = 100, Viewing 2ω = 17° Ratio Length Angle				
	Radius of Curvature	Distance or Thickness	Refractive Index	Abbe Number
L_1	$r_1 = 65.3546$	$d_1 = 12.701$	$n_1 = 1.5687$	$\nu_1 = 63.2$
	$r_2 = -180.5426$	$d_2 = 2.303$		
L_2	$r_3 = -156.0779$	$d_3 = 5.778$	$n_2 = 1.6034$	$\nu_2 = 38.0$
	$r_4 = 308.9377$	$d_4 = 0.286$		
L_3	$r_5 = 48.4589$	$d_5 = 10.269$	$n_3 = 1.5687$	$\nu_3 = 63.2$
	$r_6 = 74.0163$	$d_6 = 0.286$		
L_4	$r_7 = 38.5400$	$d_7 = 8.310$	$n_4 = 1.5163$	$\nu_4 = 64.1$
	$r_8 = 81.0961$	$d_8 = 4.134$		
L_5	$r_9 = 159.3317$	$d_9 = 12.315$	$n_5 = 1.7408$	$\nu_5 = 27.8$
	$r_{10} = 21.6571$	$d_{10} = 14.832$		
L_6	$r_{11} = 51.8114$	$d_{11} = 4.005$	$n_6 = 1.6727$	$\nu_6 = 32.1$
	$r_{12} = -385.0579$			

4,274,712

SOLAR RADIATION REFLECTORS ADAPTED TO TRACK THE INCIDENT RAYS OF THE SUN

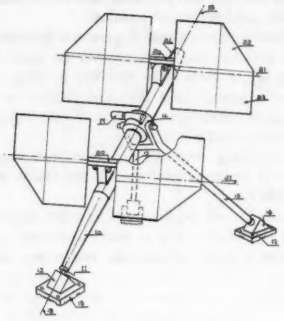
Julio F. Sintes, Madrid, Spain, assignor to Sener, Ingenieria y Sistemas, S.A., Spain

Filed Jan. 24, 1979, Ser. No. 3,720

Int. Cl.³ G02B 7/18

U.S. Cl. 350—299 **7 Claims**

1. A solar radiation reflector which comprises a bearing column, a plurality of secondary structures mounted on the bearing column and a series of reflecting surfaces mounted on the secondary structures, the bearing column is mounted in an inclined position with respect to the local horizontal plane, the bearing column being mounted to have the ability to swing freely around its axis, a first drive mechanism connected with the bearing column for fixing the swing position of the column in any location around its axis, the secondary structures each being articulatedly mounted to the bearing column so that each secondary structure has the ability to swing with respect to the bearing column around a respective axis of articulation, a second drive mechanism connected with the secondary structures for swinging them around the respective axes of articulation, supports for supporting the column including one support located at the lower end of the column which for being anchored directly to the ground, and a second support at an intermediate point along the column, the second support is supported by a flat structure that extends to a bottom thereof and the flat structure is anchored at the bottom to the ground and the flat structure is located in a plane substantially perpendicular to the axis of swing of the bearing column.



4,274,713

DEVICE WITH A SCATTER-FREE LIGHT VALVE

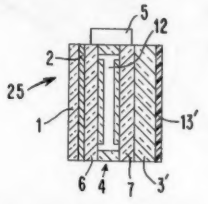
Hans Krueger, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 26, 1978, Ser. No. 928,069

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735195

Int. Cl.³ G02F 1/133

U.S. Cl. 350—347 R **1 Claim**



1. In a device including a scatter-free light valve comprising a cell having two carrier plates which are arranged in parallel to one another to form a chamber therebetween, the surfaces of said plates facing said chamber being provided with electrically conductive, transparent coatings and said chamber receiving a liquid crystal layer, which can be switched between different optical states, the improvement comprising said device being a rear view mirror in a motor vehicle, said device having a reflective mirror layer in direct contact with one of the carrier plates and a circular polarizer being disposed in front of the other carrier plates to circularly polarize light entering the cell, said liquid crystal layer while in a rest state having a twisted homeogeneously orientation and with in-

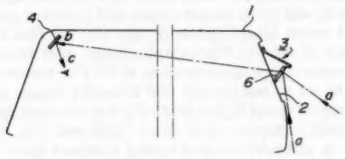
creasing voltages assumes a homeotropic orientation, and said device including a light sensitive element electrically connected to the transparent coatings of the light valve so that the liquid crystal layer is constantly changing its light transmittance in response to the intensity of the light radiation falling onto the light sensitive element.

4,274,714

REAR VIEWER FOR AUTOMOBILE

Makoto Okamura, No. 1567-4, Sakata, Okegawa City, Japan

Filed Jul. 3, 1979, Ser. No. 54,536
Claims priority, application Japan, Jul. 15, 1978, 53/97419[U]
Int. Cl.³ G02B *3/08*
U.S. Cl. 350—452 **3 Claims**



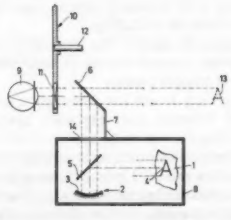
1. An arrangement for enabling the driver of an automobile having a rear window to see in a rear view mirror the area adjacent and below the rear end of the automobile, comprising an elongated box member of substantially triangular cross section perpendicular to the longitudinal axis of said box member, and having a roof wall on the upper side thereof extending along one side of said triangular cross section, a first opening extending along another side of said substantially triangular cross section and a second opening extending along the remaining side of said substantially triangular cross section, and including Fresnel light refracting optical means formed from synthetic resin and located in said second opening, bonding means being provided around the edges of said first opening for bonding said box member to the outside surface of said rear window, in such manner that said optical means is directed towards said area adjacent and below the rear end of the automobile, whereby light from said area is refracted by said optical means to the rear view mirror.

4,274,715

METHOD AND APPARATUS FOR THE PROJECTION OF OPTICAL TEST OBJECTS

Josef Reiner, Cologne, Fed. Rep. of Germany, assignor to Herbert Schwind GmbH & Co. KG, Aschaffenburg, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,644
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815121
Int. Cl.³ A61B *3/02, 3/10*
U.S. Cl. 351—30 **5 Claims**



1. An apparatus for the projection of optotypes for use in the subjective determination of eye refraction, the apparatus comprising:

a. a housing;

b. a collimator disposed within the housing;

c. means disposed within the housing the forming illuminated optotypes at the object focal plane of the collimator; and

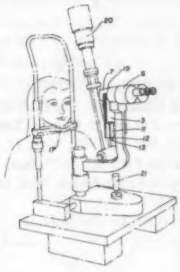
d. means coactive with the eye under examination and receptive of the image from the collimator for projecting same into free space in a line of sight defined by the eye and the projected image which is outside of said housing, the projecting means comprising means defining an output aperture in the housing through which the collimator image passes and a beam splitter mirror outisde of the housing and in said line of sight and receptive of the collimator image through the aperture.

4,274,716

OCULAR FIXATION DEVICE

James A. Gammon, 8907 Winands Rd., Randallstown, Md. 21133

Filed Jul. 5, 1979, Ser. No. 55,042
Int. Cl.³ A61B *3/10, 3/02, 3/00*
U.S. Cl. 351—36 **6 Claims**



1. An ocular fixation device for use with a binocular microscope ophthalmological instrument used for examining the eyes of a patient comprising:

a pair of light emitters;

electric circuit means connected to said emitters enabling an examiner to selectively, individually energize said emitters;

a transparent shield formed for mounting on said microscope substantially perpendicular to the optical axes thereof; and

said emitters being mounted on said shield in a normally horizontal spaced relation corresponding generally to the interpupillary spacing of the patient for individual left and right eye viewing by the patient.

4,274,717

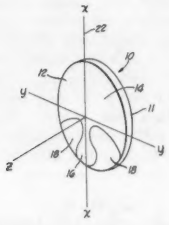
OPHTHALMIC PROGRESSIVE POWER LENS AND METHOD OF MAKING SAME

Lawrence J. Davenport, Downey, Calif., assignor to Younger Manufacturing Company, Los Angeles, Calif.

Filed May 18, 1979, Ser. No. 40,235
Int. Cl.³ G02C *7/06*
U.S. Cl. 351—169 **8 Claims**

1. An improved ophthalmic lens with progressively varying focal length having two refractive surfaces, one of which is divided into first, second and third viewing zones intended respectively for distant vision, intermediate vision and near vision, said one surface including a meridional curve passing through the optical center of the lens and traversing said zones, said meridional curve being defined by a sequence of points on said one surface and substantial peripheral portions of the lower half of said one surface and having a substantially con-

stant curvature providing a substantially constant focal length for distant vision, said third viewing zone occupying a lower portion of said one surface providing a substantially constant focal length for near vision, and said second viewing zone lying between said first and third viewing zones providing for intermediate vision, said second viewing zone further having



on each side of the meridian substantially symmetrical zones of astigmatism aberrations said one surface of said second viewing zone being generated by portions of a family of circles developed by passing an inclined plane through a multiplicity of spheres of predetermined radius, each of said spheres being tangent to said sequence of points defining said meridional curve.

4,274,718

SOUND MOTION PICTURE CAMERA

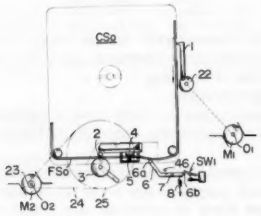
Yutaka Kohtani, and Yoshio Komine, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 961,766, Nov. 17, 1978, abandoned. This application Oct. 30, 1979, Ser. No. 89,453

Claims priority, application Japan, Nov. 18, 1977, 52-139267; Oct. 13, 1978, 53-126564

Int. Cl.[3] G03B *31/02*

U.S. Cl. 352—14 **43 Claims**



1. A sound motion picture camera for use with a film, comprising:

(A) trigger means for triggering the camera, said trigger means producing a trigger signal during the camera triggering;

(B) an exposure aperture for exposing the film to scene lights;

(C) first film transport means for transporting the film for filming near said exposure aperture;

(D) sound recording means for recording sound signals on the film, said sound recording means being disposed at a location remote from said exposure aperture;

(E) second film transport means for transporting the film for sound recording near said sound recording means;

(F) loop detecting means for detecting a variation in the film loop length formed between said exposure aperture and said sound recording means, said loop detecting means producing a first signal representing an increase in film loop length when it detects an increase therein over a predetermined loop length and producing a second signal during the other time;

(G) signal output means capable of responding to both the trigger signal produced by said trigger means and the first signal produced by said loop detecting means, said signal output means producing a third signal in response to the trigger signal from said trigger means until at least a predetermined time elapses after camera trigger and when said first and second signals are alternately emitted by said loop detecting means after camera trigger, said signal output means being responsive thereto to continue to emit said third signal even after the lapse of said predetermined time; and

(H) film transport speed control means for controlling the film transport speed of said first film transport means in accordance with the first and second signals produced from said loop detecting means and the third signal emitted by said signal output means, said transport speed control means being capable of selecting the film transport speed of said first film transport means from among a first transport speed corresponding to the film transport speed to be set to said second film transport means, a second transport speed higher than said first transport speed and a third transport speed lower than said first transport speed, and selecting said second transport speed when it receives both the third signal from said signal output means and the second signal from said loop detecting means, selecting said third transport speed when it receives both the third signal from said signal output means and the first signal from said loop detecting means, and selecting said first transport speed when it receives only the second signal from said loop detecting means.

23. A sound motion picture camera for use with a film, comprising:

(A) trigger means for triggering the camera;

(B) an exposure aperture for exposing the film to scene lights;

(C) first film transport means for transporting the film for filming near said exposure aperture;

(D) sound recording means for recording sound signals on the film, said sound recording means being disposed at a location remote from said exposure aperture;

(E) second film transport means for transporting the film for sound recording near said sound recording means;

(F) film transport speed control means for controlling the film transport speed of said first film transport means, said speed control means being changeable over between a first control mode for controlling the film transport speed of said first film transport means so that the film transport speed of said first film transport means is constant and a second control mode for changeable controlling the film transport speed of said first film transport means so that the amount of the film loop formed between said exposure aperture and said sound recording means is maintained substantially at a predetermined loop amount, said second control mode having a sub-mode for setting at least, the film transport speed of said first film transport means to a transport speed higher than the film transport speed of said second film transport means to increase the film loop;

(G) mode control means for determining the speed control mode of said film transport speed control means, said mode control means including:

(G-1) timer means for setting the time for holding said film transport speed control means in said sub-mode in response to said trigger means;

(G-2) loop detecting means for detecting a variation in film loop formed between said exposure aperture and said sound recording means; and

(G-3) control circuit means capable of responding to both of said timer means and said loop detecting means, said control circuit means setting said film transport speed control means to said sub-mode within said time set by said timer means after camera trigger, and setting said speed control means to said second control mode when said loop detect-

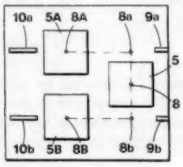
ing means detects a variation in film loop length during said time, and setting said speed control means to said first control mode with the lapse of the time set by said timer means when said loop detecting means does not detect a variation in film loop length.

4,274,719

SLIDE PROJECTOR

Charles-Louis Rochat, Chemin des Tournettes, Veyrier, Geneva, Switzerland

Filed Sep. 5, 1979, Ser. No. 72,607
Claims priority, application Switzerland, Sep. 16, 1978, 9666/78
Int. Cl.³ G03B *23/02, 21/14*
U.S. Cl. 353—103 **4 Claims**



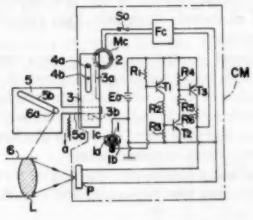
1. A projector for slides comprising, means constituting a vertical channel for receiving slides, said means comprising an upper removable magazine portion and a lower portion for receiving slides after being shown, two juxtaposed slide supports adjacent said channel, two juxtaposed light projecting means arranged to project light through slides in said supports, carriage means in said channel for transporting a slide from the magazine to either of two positions each in line with one or the other of said slide supports, first pusher members for pushing a slide from either of said positions to the corresponding slide support, and second pusher members for pushing a slide from one or the other of said slide supports back to the corresponding position, said carriage means being formed of two parts adapted to be separated to allow passage of slides between them.

4,274,720

AUTOMATIC FOCUS CONTROL DEVICE FOR OBJECTIVE LENS EXCHANGEABLE CAMERAS

Kayoshi Tsujimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1979, Ser. No. 31,925
Claims priority, application Japan, Apr. 21, 1978, 53-47980
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **6 Claims**



1. An automatic focusing system for an objective lens exchangeable camera, comprising: an exchangeable lens having a lens group movable for focusing the lens; a fixed member with a mount for mounting said exchangeable lens on said camera, and a lens drive member movable relative to said fixed member for driving said lens group along the optical axis thereof, said mount including an aperture; a camera body including a movable member movable to any position corresponding to any position of said movable lens group, and means for determining the position of said movable member;/an intermediate member for interconnecting said movable member and said lens drive member upon coupling of said exchangeable lens with said camera body such that the position of said movable member determines the position of said movable lens group, said intermediate member being included in said exchangeable lens and extending through said aperture of said lens mount, said movable member including an abutting member abutting with said intermediate member from one direction to form one-directional engagement therewith; and

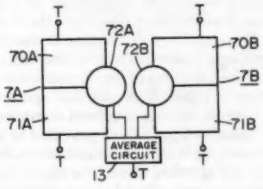
biasing means for abutting said intermediate member and said abutting member.

4,274,721

METERING DEVICE OF A CAMERA

Toru Fukuhara, Isehara, and Takashi Saegusa, Sagamihara, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,454
Claims priority, application Japan, Feb. 28, 1979, 54-24089[U]
Int. Cl.³ G03B *7/099*
U.S. Cl. 354—31 **3 Claims**



1. A metering device of a camera comprising:

a first photoelectric device provided with a light-receiving surface divided into a plurality of light-receiving portions each having a predetermined configuration;

a second photoelectric device provided with a light-receiving surface divided into a plurality of light-receiving portions having configurations corresponding to said plurality of light-receiving portions of said first photoelectric device; and

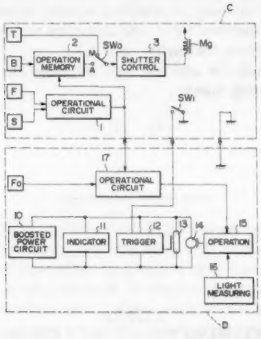
optical means for forming an object field image on the light-receiving surfaces of said first and second photoelectric devices so that metering areas metered by the light-receiving surfaces of said first and second photoelectric devices partly overlap each other on a phototaking picture and that the entire phototaking picture is substantially covered by said metering areas;

said photoelectric devices being disposed so that the metering area, on said phototaking picture, of each of the light-receiving portions of the light-receiving surface of said first photoelectric device and the metering area, on said phototaking picture, of each of the light-receiving portions of the light-receiving surface of said second photoelectric device corresponding to the light-receiving portions of said first photoelectric device are substantially symmetrical with respect to a bisector of said phototaking picture.

4,274,722
AUTOMATIC FLASH LIGHT CONTROL DEVICE FOR CAMERA

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Aug. 25, 1978, Ser. No. 936,691
Claims priority, application Japan, Aug. 31, 1977, 52-104638
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—33 **1 Claim**



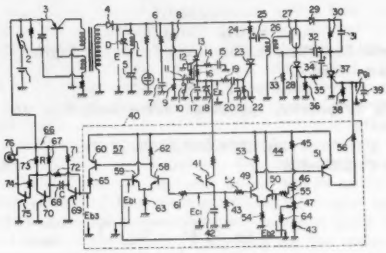
1. In a camera having a camera body, and a flash light device removable from said body, an automatic flash light control device for a single lens reflex camera having an interchangeable lens and provided with an exposure control means of the aperture size priority type in which the amount of light emitted by an electronic flash light tube is controlled by a control means according to the light reflected by an object to be photographed and illuminated by light from the flash light tube in view of the film sensitivity of the film in the camera and the selected diaphragm aperture size of the taking lens of the camera represented in terms of the displacement of the selected diaphragm aperture size from the full aperture size of the taking lens, wherein the improvement comprises: a full aperture size information input means provided in said flash light device and connected with said control means for giving information on the full aperture size of the taking lens to said control means, whereby said control means controls the amount of light emitted by the electronic flash light tube in accordance with the combination of the film sensitivity of the film in the camera, the selected diaphragm aperture size of the taking lens of the camera represented in terms of the displacement thereof from the full aperture size of the taking lens, and the full aperture size of the taking lens.

4,274,723
AUTO ELECTRONIC FLASH UNIT

Sigemi Igarashi, Tokyo, Japan, assignor to Sato Koki Company, Ltd., Tokyo, Japan

Filed Jan. 11, 1979, Ser. No. 2,593
Claims priority, application Japan, Apr. 30, 1978, 53-51506
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—33 **4 Claims**

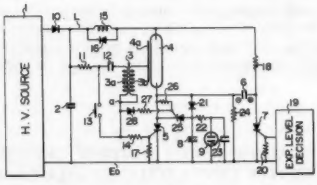
1. An auto-electronic flash unit comprising: a photosensing means for receiving light from a subject; a flash tube for emitting flash light by discharging current from a main condenser for illumination of said subject; a primary integral circuit means; interruption circuit means for interrupting the illumination from said flash tube when the amount of light reflected from the subject and received by said photo-sensing means exceeds a predetermined setting in said primary integral circuit means by application of an electric signal from said primary integral circuit circuit means; a secondary integral means; said secondary integral circuit means adapted to generate an electric signal when the light reflected from the subject is less than the predetermined value set in said primary integral circuit means for energizing said interrupting means, but equal to or more than a predetermined setting in said secondary integral circuit means at which proper exposure can occur; adjusting means for adjusting the predetermined setting in said primary and secondary integral circuit means; indicating means receiving the electric signal generated by said secondary integral circuit means for indicating proper exposure when the distance between the camera and subject is beyond the range of operation of the primary integral circuit means and proper exposure can still occur.



4,274,724
INDICATOR CIRCUIT FOR AUTO-STROBO UNIT

Yukio Nakajima, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 16, 1979, Ser. No. 21,161
Claims priority, application Japan, May 25, 1978, 53/62566
Int. Cl.³ G03B *15/05;* **H01J** *7/42;* **H05B** *37/03, 41/32*
U.S. Cl. 354—33 **11 Claims**



1. In an electronic flash unit including:
a flash discharge tube;
first normally-off switch means coupled to said flash discharge tube for completing a discharge path through said flash discharge tube when turned on;
trigger means for turning on said first switch means to operate said electronic flash unit, thus providing a flashlight illumination;
exposure level control means for receiving the reflected light from a subject during the operation of the flashlight illumination of said flash discharge tube for operating said first switch means to the off condition when the amount of flashlight illumination of said flash discharge tube reaches a predetermined exposure level;
a capacitor being selectively charged by a current from said flash discharge tube when said first switch means is turned off;
indicator means being directly connected to said capacitor for selective operation by the charge developed across said capacitor;
the improvement comprising:
a discharge circuit including second switch means in series with said first switch means, said second switch means being coupled between said capacitor and said first switch means, said second switch means including control means

for turning on said second switch means responsive to the operation of said trigger means to actuate said discharge circuit for discharging any remaining charge from said capacitor to prevent further illumination of said indicator means.

4,274,725

DEPTH OF FIELD OBJECTIVE

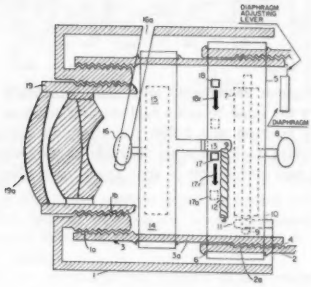
Walter O. Gross, Lausanne, Switzerland

Continuation of Ser. No. 656,607, Feb. 12, 1976, abandoned. This application Jan. 11, 1978, Ser. No. 868,707

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1975, 2510941

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—196 **7 Claims**



3. An objective for photographic cameras, comprising an optical system; means for focusing said optical system upon objects located at different distances from the objective, including means for moving said optical system in the direction of the optical axis; means in the objective for storing information pertaining to various positions of said optical system; means for actuating said information storing means; and means for automatically shifting said optical system to an exposure position substantially midway between spaced-apart first and second positions in each of which said information storing means was actuated so that the photographic camera embodying the objective is ready to make an exposure of objects located within the depth of field range bounded by points upon which said system was focused in said first and second positions thereof.

4,274,726

AUTOMATIC FILM WINDER FOR CAMERA

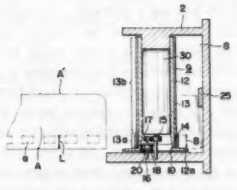
Saburo Yoneyama, Akikawa; Minoru Yamada, Hachioji; Yasutsugu Nakagawa, Tokyo; Shizuo Ishii, Tokyo, and Masao Kamio, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,571

Claims priority, application Japan, Jun. 1, 1979, 54-69240

Int. Cl.³ G03B *1/04*; B65H *75/28*

U.S. Cl. 354—173 **23 Claims**



1. An automatic film winding device for camera, and said camera having therein a film winding chamber for containing a roll of film of the type in which the leading end of the film is wound on a film winding member by dint of a frictional force, a sprocket disposed at the entrance of said film winding chamber including said film winding member, gear trains for connecting said film winding member and said sprocket, the peripheral speed of said film winding member being larger than that of said sprocket, improvement of the device which comprising the film winding member of which the outer peripheral portion at one end is formed larger in diameter than the other outer peripheral portion, said member including a flange formed at said larger diameter end.

4,274,727

FAIL-SAFE SYSTEM FOR THE ELECTRONIC SHUTTER OF A CAMERA

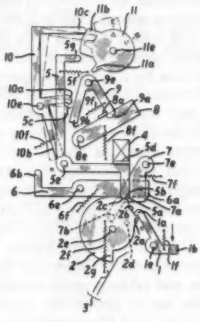
Ichiro Nemoto, and Eiichi Onda, both of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,465

Claims priority, application Japan, Oct. 23, 1978, 53-145635[U]

Int. Cl.³ G03B *9/08*

U.S. Cl. 354—234 **6 Claims**



1. A camera shutter mechanism, comprising: an electromagnet an armature lever mounted for pivoting toward and away from said electromagnetic and having an armature which is attracted by said electromagnetic when said electromagnet is energized for holding said armature lever against said electromagnet; a movable shutter regulating member enagagable with said armature lever and movable between a charged position forcing said armature against said electromagnet and a second position at which said armature lever is free to pivot away from said electromagnet and at which said shutter regulating member effectuates shutter opening; means urging said armature lever away from said electromagnet when said electromagnet is deenergized toward a position where said armature lever effectuates shutter closing; stopping means for stopping movement of said shutter regulating member and for stopping movement of said armature lever prior to shutter opening when said electromagnet is insufficiently energized to hold said armature from pivoting away from said electromagnet to the position where said armature lever effectuates shutter closing; and an operating member movable to and from a position at which said armature lever is moved by said operating member towards said electromagnet to permit said shutter regulating member to continue pivoting to effectuate shutter opening after said shutter regulating member had been stopped by said stopping means.

4,274,728
FILM CASSETTE

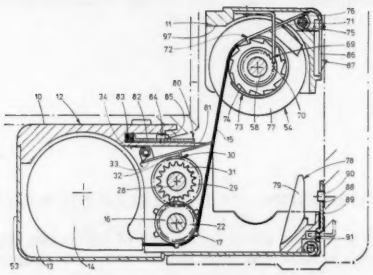
Heinz Waaske, Am Hasengarten 2, 3300 Braunschweig, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,210

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925496

Int. Cl.³ G03B *17/26, 17/36*

U.S. Cl. 354—275 **34 Claims**



1. A film cassette for use in a photographic camera having a film transport means and a cassette control means, said cassette comprising a main part for receiving a supply of film, and a detachable part movable by the control means between an end position in the camera spaced from said main cassette part, and a closed position in which it forms with the main part a light tight housing unit, said detachable part including a rotary take-up spool driven by the film transport means and by the cassette control means to rotate in the film advancing direction, said main part supporting for rotation a sprocket roller engageable with the film, a first driving element engageable with said transport means, a clutch provided between said sprocket roller and said driving element, a clutch control mechanism arranged on said main part and cooperating with the film transport means to engage said clutch with said driving element and including a manually operated control element to disengage said clutch from said driving member, means for blocking said sprocket roller when said detachable part is in said end position, and take-up spool arresting means arranged in said detachable part to permit the rotation of said spool in direction opposite to said film advancing direction when at least a portion of the film is wound up on the spool and to arrest the rotation of the spool in said opposite direction when the spool is empty.

4,274,729
PHOTOGRAPHIC STILL CAMERA

Heinz Waaske, Am Hasengarten 2, 3300 Braunschweig, Fed. Rep. of Germany

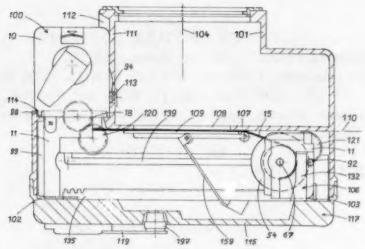
Filed Jul. 10, 1980, Ser. No. 167,316

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944137

Int. Cl.³ G03B *17/26, 17/00, 17/42*

U.S. Cl. 354—275 **57 Claims**

1. A photographic still camera having a housing formed with an aperture for an objective centered about an optical axis, comprising an exposure framing platform fixedly mounted in said housing in a film plane extending at right angles to said optical axis, said framing platform having a film gate aligned with said objective aperture, a film cassette receptacle formed at an outer lateral wall of said housing and communicating with the interior of said housing behind said framing platform when considered in the direction of incoming light, said receptacle being designed for receiving a bipartite film cassette assembled of a main cassette part and a detachable cassette part, a cassette guiding track provided in the interior of said housing behind said framing platform and including guiding means directed transversely to said optical axis, a sliding carriage guided on said guiding means to move between a starting position in said receptacle and a working end position past said film gate, said carriage including at least one



entrainment piece engageable with said detachable cassette part to carry the same between said starting position and said end working position, and a film pressure plate arranged behind said guiding track and being operable for movement in the direction of said optical axis to abut against said film gate.

4,274,730
SYSTEM FOR INPUTTING INFORMATION INTO DIGITAL CONTROL CIRCUIT MEANS OF A CAMERA

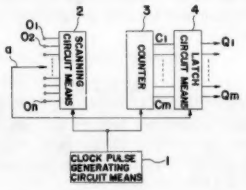
Nobuyuki Taniguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1979, Ser. No. 25,443

Claims priority, application Japan, Mar. 30, 1978, 53/37894

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—289 **29 Claims**



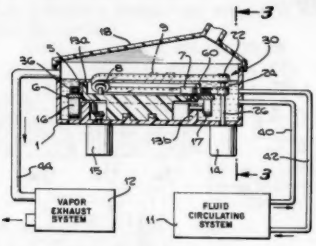
1. A system for inputting information into a digital control circuit means of a camera, comprising:

at least one clock pulse generating circuit means; scanning circuit means having a plurality of output terminals to be successively scanned one by one in synchronism with consecutive pulses of a clock pulse train; at least one terminal selecting means for selecting at least one of said output terminals according to predetermined selection; and at least one counting circuit means for counting said pulses of said clock pulse train, wherein at least one digitalized information signal, output from said counting circuit means at a predetermined time when one of said output terminals selected is scanned, is inputted through said terminal selecting means to said digital control circuit means as a digitalized information word in correspondence with said selection.

4,274,731
TOTAL IMMERSION CONTINUOUS LOOP APPARATUS AND METHOD

William D. Carter, Rancho Palos Verdes, and Martin S. Mueller, Torrance, both of Calif., assignors to Carter Equipment Co., Inc., Lawndale, Calif.

Filed Oct. 18, 1979, Ser. No. 85,910
Int. Cl.[3] G03B 27/52
U.S. Cl. 355—30 6 Claims



1. A method of supplying a master picture negative, a master sound track, or other flexible web material to a dry or wet motion picture printing machine comprising the steps of:

arranging the master picture negative, master sound track, or other flexible web material in a continuous loop arrangement having a multi-loop portion and an extended loop portion;

threading the extended loop portion of said master picture negative, master sound track, or other flexible web material into and through said dry or wet motion picture printing machine;

immersing the multi-loop portion of the master picture negative, master sound track, or other flexible web material in a tank which contains a liquid that is compatible with the master picture negative, master sound track, or other flexible web material; and

then driving the master picture negative, master sound track or other flexible web material in a continuous loop path through the printing machine.

2. An apparatus for supplying a flexible web material to a motion picture printing machine comprising:

a tank;

liquid filling the entire tank;

a flexible web material arranged in a continuous loop and having a multi-loop portion and an extended loop portion;

said liquid being physically compatible with said flexible web material;

a thin-walled cylindrical member having a gap in its periphery;

a ring shaped sheet member having a cavity in its central portion, said cylindrical member being disposed above said sheet member and about said gap;

said multi-loop portion of said flexible web material being arranged so it surrounds said cylindrical member and is disposed above said ring-shaped sheet member while being immersed in said liquid;

a solid cylindrical piece of material containing a central cavity, being positioned inside said tank so that it rests on the base of said tank;

multiple support rollers surrounding said solid cylindrical piece of material inside said tank;

said multi-loop portion of said flexible web material being placed inside said tank so that said cylindrical member surrounds said cylindrical piece of material and said ring-shaped sheet member rests on said support rollers;

driving means to cause said ring-shaped sheet member and said flexible web material to rotate in a circular fashion;

two separate sprockets located inside said cavity of said cylindrical piece of material with one vertical sprocket vertically so aligned as to fit adjacent the gap in said cylindrical member and the other sprocket aligned in an angle;

a spindle containing two sprockets along its shaft and vertically aligned next to and on the outside surface of said multiple portion of said flexible web material;

said extended portion of said flexible web material being threaded through a motion picture printing machine;

said extended portion of said flexible web material being arranged so that one end passes around said sprocket located inside said cavity of said cylindrical piece of material and passes around one of said sprockets on said spindle located adjacent said multi-loop portion of said flexible web material and then exits said tank and enters said motion picture printing machine;

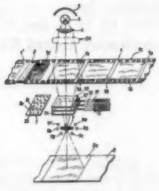
said extended portion of said flexible web material further arranged so that said extended portion of said flexible web material returning from said motion picture printing machine enters said tank, passes around the second sprocket on said spindle located adjacent said multi-loop portion of said flexible web material, and then travels to and becomes part of the outer circumference of said multi-loop portion of said flexible web material; and

means for continuously circulating and filtering said liquid while said apparatus is in operation.

4,274,732
METHOD AND APPARATUS FOR MAKING REPRODUCTIONS OF COLOR FILM FRAMES

Siegfried Thurm, Voiswinkel, and Konrad Bunge, Cologne, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,514
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 2803381
Int. Cl.[3] G03B 27/73
U.S. Cl. 355—38 24 Claims



16. Apparatus for reproducing images which are exposed on a color original, particularly a color negative before the original is treated in a developing machine, said original being provided with exposures of a series of gray filters having different densities, comprising signal generating means for monitoring the density of said exposures in each of the primary colors; signal generating means for monitoring the density of said images in each of the primary colors; and means for regulating the quantity of copying light in each of the primary colors for the making of reproductions of said images on photosensitive material on the basis of signals furnished by both said monitoring means.

4,274,733
COPYING APPARATUS WITH STATIONARY ORIGINAL SUPPORT TABLE AND NOVEL IMAGING LENS SYSTEM

Muneharu Sugiura, Tokyo, and Setsuo Minami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,109
Claims priority, application Japan, Apr. 19, 1978, 53/47084
Int. Cl.[3] G03B 27/34
U.S. Cl. 355—60 5 Claims

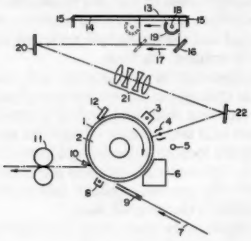
1. A copying apparatus for copying a stationary original, comprising:

a planar stationary original support table;

at least one mirror linearly moveable in a plane parallel to said original support table to scan the surface of an original placed on said original support table;

a photosensitive member for receiving the information of said surface of the original; and

an imaging lens system including plural lens groups, said system being provided between said mirror and said photosensitive member, wherein a constant magnification of



the image on said photosensitive member and an optical conjugate relationship between the original and said photosensitive member are maintained only by displacing at least one of said lens groups along its optical axis in synchronism with the displacement of said mirror.

4,274,734

MASKING FRAME

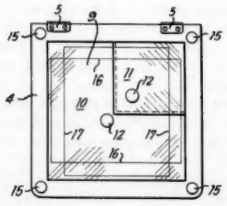
Brian F. Moss, Rayleigh, United Kingdom, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 14, 1979, Ser. No. 94,247

Claims priority, application United Kingdom, Nov. 20, 1978, 45288/78

Int. Cl.[3] **G03B** *27/58*

U.S. Cl. 355—74 **6 Claims**



1. A photographic masking frame which comprises a base plate and a raisable frame which holds the print material flat on the base when in the working position and which has an aperture therein, the aperture in the said raisable frame being closed by a removable square mask formed in two portions, one portion being L shaped and covering substantially three quarters of the area of the aperture and the other portion being square and covering the remaining quarter area of the aperture, the said removable mask which can be lifted as a single unit fitting into a square recess of like dimensions formed in the top surface of the raisable frame, the area of the recess being greater than the area of the aperture in the frame, the said square portion of the mask being raisable without disturbing the L shaped portion of the mask and overlapping the adjacent edges of the L shaped portion of the mask so as to render the join light tight.

4,274,735

DISTANCE MEASURING DEVICE

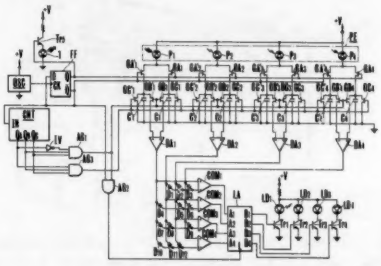
Shuichi Tamura; Yukichi Niwa, both of Yokohama; Masahiko Ogawa, Hino; Mitsutoshi Owada, Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1979, Ser. No. 40,473

Claims priority, application Japan, May 25, 1978, 53-63048

Int. Cl.[3] **G01C** *3/00, 5/00;* **G03B** *7/08*

U.S. Cl. 356—1 **16 Claims**



1. A distance measuring device comprising:

(a) light projecting means for projecting light to a target object;

(b) light receiving means provided in a position for receiving the reflected light from said target object to produce an electrical signal corresponding to the reflected light from said target object, said light receiving means having a plurality of light receiving elements independent of each other and arranged in such positions so as to correspond to different object distances from each other;

(c) memory means coupled to the output terminals of said light receiving means to memorize the electrical signals from said light receiving means, said memory means having a first memory group consisting of a plurality of memory elements connected to the respective light receiving elements, and a second memory group consisting of a plurality of memory elements connected to said respective light receiving elements;

(d) control means coupled to said light projecting means to intermittently energize said light projecting means;

(e) first means coupled to said first memory group to permit the transfer of the electrical signals produced from the light receiving means in synchronism with energization of said light projecting means to said first memory group, each of the plurality of memory elements of the first memory group memorizing a plurality of electrical signals generating from the corresponding light receiving elements in synchronism with each of the plurality of de-energizations of said light projecting means;

(f) second means coupled to said second memory group to permit the transfer of the electrical signals produced from the light receiving means in synchronism with de-energization of said light projecting means to said second memory group, each of the plurality of memory elements of the second memory group memorizing a plurality of electrical signals generating from the corresponding light receiving elements in synchronism with each of the plurality of de-energizations of said light projecting means;

(g) differential means having a plurality of differential elements connected to the outputs of the memory elements in said first memory group and the outputs of the second memory elements in said second memory group corresponding to said memory elements to produce signals corresponding to the differences between the outputs of the memory elements in the first memory group and the outputs of the memory elements in the second memory group corresponding to said memory elements; and

(h) comparing means for producing a signal corresponding to said target object distance by comparing the outputs of said plurality of differential elements.

4,274,736

METHOD AND APPARATUS FOR ELECTROOPTICAL DISTANCE MEASUREMENT

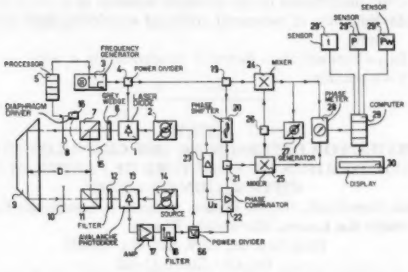
Beat Balmer, Unterkulm, Switzerland, assignor to Kern & Co. AG, Aarau, Switzerland

Filed Sep. 26, 1979, Ser. No. 79,102

Claims priority, application Switzerland, Oct. 11, 1978, 10573/78

Int. Cl.³ G01C *3/08*

U.S. Cl. 356—5 **17 Claims**



1. A method for electrooptical distance measurement, whereby a beam of modulated light is transmitted over the distance and after reception is converted into an electrical signal corresponding to the modulation of light, said signal being compared with respect to time with reference signal used for modulating the light beam, at least one of said signals being shifted with respect to the other one until a given time relation between the signals is reached, and the distance being found from the extent of said signal shift, comprising the steps

(a) mixing for temporal comparison the signal converted from the modulated light and the reference signal used for modulating the light beam,

(b) time-shifting the reference signal by means of a control circuit and a driving signal obtained from said mixing step, until a given time relation with respect to the converted signal is reached,

(c) frequency converting to a lower frequency the shifted as well as the unshifted reference signals, and

(d) measuring the temporal difference of the frequency-converted reference signals to determine the temporal shift of the reference signal obtained in said time-shifting step.

4,274,737

TEST PATTERNS FOR LENS EVALUATION

Bradford Howland, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 19, 1979, Ser. No. 86,574

Int. Cl.³ G01M *11/02*

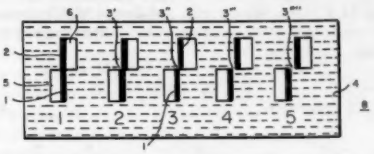
U.S. Cl. 356—124.5 **5 Claims**

1. A lens testing chart comprising,

a plurality of pairs of black lines,

the black lines of each pair being substantially aligned along their lengths but transversely displaced by a different amount in each pair,

each of the black lines of each pair having a white region along one of its sides and a grey region along the other of its sides, the white region for one of the black lines of a pair being on one side of the one black line of the pair and



the white region for the other black line of the pair being on the other side of the other black line of the pair.

4,274,738

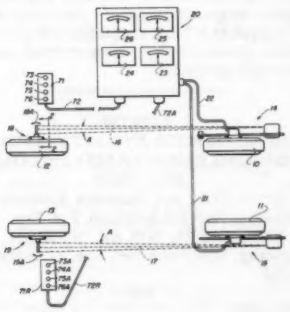
ROTARY BODY RUN-OUT REMOTE SENSING METHOD AND APPARATUS ESPECIALLY APPLICABLE TO VEHICLE WHEEL ALIGNERS

William J. Hollandsworth, Town & Country, and Dean O. Grubbs, Manchester, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Jun. 14, 1979, Ser. No. 48,624

Int. Cl.³ G01B *11/275*

U.S. Cl. 356—155 **11 Claims**

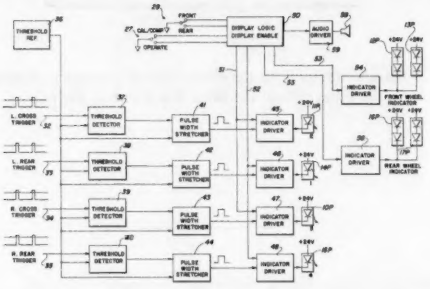


1. A method for finding wobble run-out characteristics of a rotary body mounted on a fixed axis and using the findings to compensate measurement of its angular orientation relative to the fixed axis, said method comprising: attaching a plano-reflective means to the body in a predetermined relation to the fixed axis; projecting from a remote location a radiant energy beam onto the plano-reflective means; rotating the body into predetermined positions displaced from a known starting position to cause the plano-reflective means to move according to the existing wobble run-out and thereby causing the projected beam to move correspondingly, sensing the amount of said motion of the projected beam and generating separate and independent signals indicative of the rotational orientation of the body relative to the fixed axis at the predetermined positions; and processing the generated signals.

4,274,739
APPARATUS FOR MONITORING OPERATIONAL STATUS AND DIAGNOSIS OF ELECTRONIC VEHICLE WHEEL ALIGNMENT EQUIPMENT

Dean O. Grubbs, Manchester, and James M. Grossman, Chesterfield, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Aug. 15, 1979, Ser. No. 66,846
Int. Cl.³ G01B *11/275*
U.S. Cl. 356—155 **4 Claims**

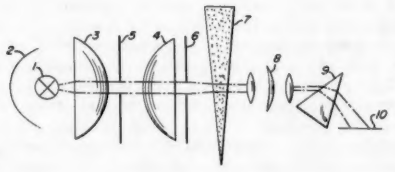


1. In display apparatus associated with alignment equipment on the front and rear vehicle wheels producing signals representing the operation of the alignment equipment at the wheels; a panel presenting to viewing by vehicle service persons a diagrammatic representation of the vehicle wheels and the alignment equipment thereon; first radiant energy display means positioned adjacent each of the wheel positions in said diagrammatic representation presented by said panel; second radiant energy display means spaced around the representation of the vehicle on said panel for monitoring the alignment equipment operation; and means interconnecting said alignment equipment and said first and second radiant energy display means including display logic circuit means and mode selection means connected to said first and second radiant energy display means for selectively indicating which of the alignment equipment is being monitored and causing said associated radiant energy display means to blink during proper operation of said equipment.

4,274,740
OPTICAL PROCESS AND APPARATUS FOR DETERMINING PARTICLE SIZE OF COLLOIDAL SOLUTION

Herrn H. Eidenschink, and Marianne Eidenschink, both of Gutenbergstr. 1, 5609 Huckeswagen, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,081
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832091
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **10 Claims**



1. A method for determining the particle size of a colloidal solution, especially a synthetic resin dispersion, the method including the steps of: providing a colloidal solution sample with a thickness which varies in a given direction; directing a light beam to propagate through the colloidal solution sample in the direction normal to said given direction; causing the emerging light beam from the sample to undergo chromatic dispersion and to be incident onto an image screen; establishing, by a relative displacement between the light beam and the varying thickness of the colloidal solution sample, a sample position which results in only the long-wave part of the visible spectrum to appear on the screen; determining the thickness of the colloidal solution section which is traversed by the beam at said position; and, determining the particle size of the colloidal solution in accordance with the formula:

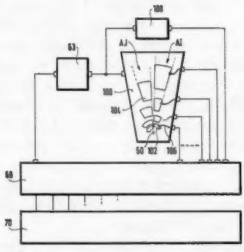
$$r = \frac{1}{c \cdot d \cdot E_{(c)} \cdot n}$$

where
r=radius of the particle (μm),
c=concentration of the colloidal solution in volume %,
d=thickness of measured colloidal solution sample section (mm),
$E_{(c)}$=concentration factor at concentration c, and
n=a constant.

4,274,741
DEVICE FOR DETERMINING THE GRANULOMETRIC COMPOSITION OF A MIXTURE OF PARTICLES BY DIFFRACTION OF LIGHT

Jean Cornillault, Nozay, France, assignor to Compagnie Industrielle des Lasers, Marcoussis, France

Filed Sep. 26, 1979, Ser. No. 79,007
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **9 Claims**



1. A device for determining the granulometric composition of a mixture of particles by light-diffraction, said device including:
a source of monochromatic light which emits a parallel beam (1);
means (2) for making the mixture pass through the beam;
an optical system for forming the diffraction pattern in the focal plane 4 of the beam by the mixture, the pattern being circularly symmetrical about a centre (5) constituted by the image of the parallel beam;
a system for scanning the diffraction pattern, said system including a set of light detectors (102, 104) each of which receives the light flux which passes through a light-integration area (AI, AJ), each area being constituted by a predetermined portion of the diffraction pattern and having substantially the form of a segment of a circular ring which is concentric with the pattern, the ring being defined by its inner and outer radii, each detector supplying a detection signal which is representative of the light flux which it receives; and
a circuit (70) for processing the data constituted by the detection signals; characterized in that said scanning system includes at least two successions (AI,AJ) of increasing inner and outer radii;
the inner radius of each integration area of each succession

(AI) being greater than the outside radius of the preceding integration area so as to allow unoccupied ranges in the continuous sequence of the values of the radii, the ranges being located between two consecutive integration areas in the continuous sequence and being narrower than the areas;

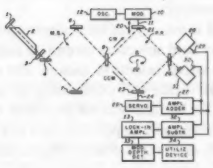
the inner and outer radii of the areas of any one of these successsions being shifted with respect to those of the areas of each other successions so that in said continuous sequence the areas of these other succesions occupy the unoccupied ranges of any succession in question, extending beyond these ranges on either side.

4,274,742

PASSIVE RING LASER RATE OF TURN DEVICES

Claude D. Lustig, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,467
Int. Cl.[3] G01C *19/64*
U.S. Cl. 356—350 **17 Claims**



1. A passive ring resonator rate of turn device including:

first mirror means forming passive resonator means for the propagation of clockwise and counter-clockwise beams of electromagnetic energy and having clockwise and counter-clockwise resonant frequencies,

source means for introducing said clockwise and counter-clockwise beams into said passive resonator means,

modulator means for oscillating said clockwise and counter-clockwise resonant frequencies between respective first and second frequencies,

detector means for producing signals representative of the instantaneous amplitudes of said clockwise and counter-clockwise beams,

circuit means responsive to said detector means for producing an output representative of an algebraic combination of the amplitudes of said clockwise and counter-clockwise beams, and

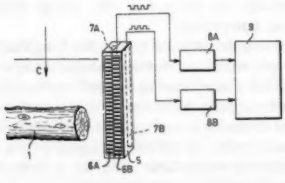
utilization means responsive to said circuit means output.

4,274,743

METHOD AND APPARATUS FOR OPTICAL MEASUREMENT OF THE DIMENSION OF AN OBJECT

Erkki U. Naulapää, Turskatie 4, 01490 Vantaa 49, and Pekka Halko, Albertinkatu 17 B 28, 00120 Helsinki 12, both of Finland

Filed Jan. 10, 1979, Ser. No. 2,447
Claims priority, application Finland, Jan. 18, 1978, 780164
Int. Cl.[3] G01B *11/02*
U.S. Cl. 356—387 **4 Claims**



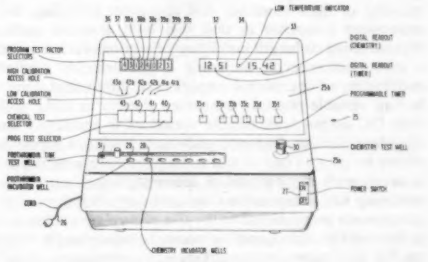
1. Apparatus for optical measurement of the dimension of an object by sweeping a ray of light with a sweeping means which displaces a ray of light without changing its direction across a photoelectrical transformer for receiving light pulses and for converting same into electrical pulses through a grid placed in front of said transformer, said grid comprising alternating non-transparent and transparent increments such that the photoelectrical transformer receives light pulses, whereby the object to be measured is placed in front of the grid such that it prevents access of the light ray onto the grid and, accordingly, to the photoelectrical transformer within an area corresponding to the dimension to be measured, and the received light pulses are converted into electrical pulses, the number of which enables a calculation of the measured dimension, characterized in that said grid is divided into at least two component grids with equally divided grid area arrangements which are placed parallel to and overlapping each other; the light pulses received from said component grids being sensed and counted separately for each component grid by said photoelectrical transformer which is accordingly divided into at least two separate component transformers for receiving the light pulses from the different component grids; and counting and comparison means for counting and processing the electrical pulses coming from the component transformers.

4,274,744

DIRECT READING DIGITAL COLORIMETER

Charles H. Chae, Greenfield; Donald E. Black, and Ramesh M. Shah, both of Indianapolis, all of Ind., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Nov. 21, 1978, Ser. No. 962,682
Int. Cl.[3] G01N *21/27*
U.S. Cl. 356—414 **10 Claims**



1. In a direct reading digital colorimeter for performing a plurality of chemical constituent concentration analyses of liquid samples irradiated by light of preselected wavelengths of the type wherein a console contains a light source, filter means for isolating selectively a plurality of frequency ranges emitted by said source for irradiating a sample inserted in a cuvette well means provided in said console, sensing means including digital readout means and analog-to-digital computing circuit means controlling said readout means in response to the intensity of light received by the sensing means from a sample irradiated by a particular one of said frequency ranges to provide a direct digital readout of the constituent concentration of a particular sample, the improvement comprising;

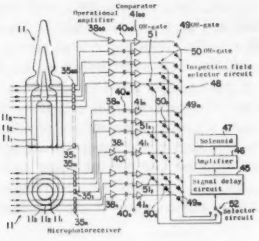
switching means comprising a plurality of user manually operable elements for individually adjusting electrical values of components of said computing circuit means and for individually selecting ranges of slope of said filter means for providing a plurality of particular chemical analyses, and;

at least one other user operable switching means independent of said first mentioned manually operable elements comprising a single manually operable element pre-programmed to adjust said electrical values and a range of slope for conducting at least one particular chemical analysis.

4,274,745
METHOD AND APPARATUS FOR DETECTING FOREIGN MATTERS IN LIQUIDS

Toshio Takahashi, Honjo, and Ryosaku Tagaya, Isesaki, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1978, Ser. No. 900,350
Claims priority, application Japan, May 12, 1977, 52-54607; Feb. 1, 1978, 53-10685
Int. Cl.[3] G01N *21/24*
U.S. Cl. 356—427 3 Claims



1. An apparatus including a photodetector and of the type for detecting foreign matters in liquids by the steps of turning a transparent container filled with a liquid at high speed, bringing the container to a standstill and therewith permitting foreign suspended matters to swirl within the liquid, illuminating the liquid and foreign matters and therewith causing the transmitted light to be received by the light sensitive surface of the photodetector opposed to the container, and measuring the quantity of light received, said apparatus including the improvement comprises in that said light sensitive surface is divided along its length into a row of sections eachconstituting a microphotoreceiver including a photoelectric element, a multiplicity of operational amplifiers of differential input type having variable resistors connected thereto to make uniform their DC output level despite variations in sensitivity among the photoelectric elements, and each having a signal input driven by its own one of said microphotoreceivers, capacitors in series with the outputs of said operational amplifiers for removing DC components from said outputs but passing AC components proportional to the size of foreign matters passing in front of the corresponding microphotoreceiver, a comparator for each microphotoreceiver, said comparators each having one input driven thereby through the corresponding said operational amplifier and capacitor, each said comparator having a reference signal input, means for applying a reference signal to said reference signal inputs, at least one inspection field selection circuit having its inputs respectively connected to the outputs of the comparators for a desired portion of said row of mirophotoreceivers, and output circuit means actuable by an output from said inspection field selection circuit to indicate an unsatisfactory foreign matters condition in a container being inspected, said reference signal applying means including a selector switch and a plurality of different reference voltage terminals individually selectable by said switch for application of reference signals to the reference input of said comparator of several magnitudes dependent on several minimum sizes of foreign matters to be detected;

wherein one portion of said microphotoreceivers is arranged in one or more rows extending vertically to the maximum effective height of the containers to be inspected and a further portion of said microphotoreceivers is arranged in one or more rows extending horizontally to the maximum effective width of the containers to be inspected and visually opposed to the bottom portion of the containers, a said inspection field selection circuit being connected to the outputs of a group of microphotoreceivers including both a vertical row and a horizontal row of microphotoreceivers which vertical and horizontal rows correspond in length respectively to the height and diameter of the containers to be inspected, said inspection field selection circuit comprising diode matrix circuits which are built so that the number of the microphotoreceivers to be employed is changed according to the size of the transparent container,

said diode matrix circuits including a first set of diodes respectively connecting the outputs of corresponding ones of a first set of said comparators to a first alternately selectable input of said selection circuit, a second set of diodes respectively connecting the outputs of only a portion of said comparators of said first set to a second alternately selectable input of said selection circuit, a third set of diodes respectively connecting the outputs of only part of said portion of said comparators of said first set to a third alternatively selectable input of said selection circuit, said first, second and third sets of diodes serving at least one vertical row of microphotoreceivers;

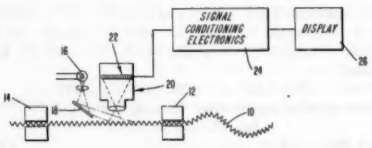
fourth, fifth and sixth sets of diodes connected like said first, second and third sets but with their inputs fed by further comparators serving at least one said horizontal row of microphotoreceivers;

first, second and third output lines alternatively connecting said inspection field selection circuit to said output circuit through alternative selection means, the outputs of said first and fourth diode sets connecting to said first output line, the outputs of said second and fifth diode sets connecting to said second output line, and the outputs of said third and sixth diode sets connecting to said third output line.

4,274,746
METHOD AND APPARATUS FOR OPTICALLY MEASURING CRIMP FREQUENCY

Max L. Cardell, Shelby, and John R. Holt, Charlotte, both of N.C., assignors to Fiber Industries, Inc., New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,260
Int. Cl.[3] G01N *21/86, 21/89*
U.S. Cl. 356—429 20 Claims



1. Apparatus for measuring the crimp frequency of a crimped tow, comprising:

means for illuminating the tow in the longitudinal direction of the tow with light having a shallow angle of incidence such that the crimps in the tow reflect the light to produce alternate bright and shadowed areas on the tow;

means for optically scanning the illuminated portion of the tow and producing an output signal which is amplitude modulated in accordance with the pattern of bright and shadowed areas on the tow;

means for measuring the frequency of said output signal; and

means for displaying the measured frequency as a function of crimps per unit length of the tow.

4,274,747

METHOD AND DEVICE FOR INSPECTING A MOVING SHEET MATERIAL FOR STREAKLIKE DEFECTS

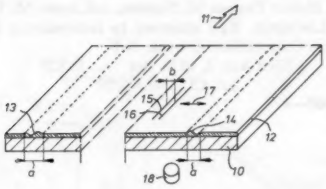
Walter P. Van Beeck, Sinaai; Alfons J. Dictus, Ekeren; Maurits Geens, Haacht; Roger J. Simons, Antwerp, and Jean Burtin, Mol, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jun. 21, 1979, Ser. No. 50,792

Claims priority, application United Kingdom, Jun. 26, 1978, 27863/78

Int. Cl.³ G01N *21/89*

U.S. Cl. 356—431 15 Claims



1. Method of inspecting sheet material for streak-like defects during travel of such material along a certain path, which method comprises the following steps: scanning across at least part of the width of said path with one or more beams of radiation, each beam of which at any given instant irradiates a narrow zone which is elongated in the direction of travel of the material; receiving radiation which has been transmitted through or reflected by the successively irradiated zones of the material on a photocell; deriving from such photocell a multiplicity of sequential signals, each representative of a particular one of said elongated narrow zones; and, comparing said successive signals with a preceding or following signal to establish amplitude differences between the thus-compared signals and from said differences to indicate the presence of said defects.

4,274,748

METHOD AND DEVICE FOR INSPECTING A MOVING SHEET MATERIAL FOR STREAKLIKE DEFECTS

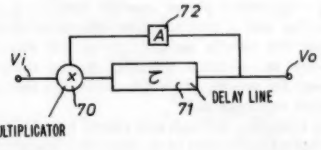
Jean Burtin, Mol, and Maurits Geens, Haacht, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Oct. 17, 1979, Ser. No. 85,711

Claims priority, application United Kingdom, Oct. 19, 1978, 41163/78

Int. Cl.³ G01N *21/89*

U.S. Cl. 356—431 10 Claims



1. In a method for inspecting at least one longitudinal section of a moving sheet material for streaklike defects, by repeatedly transversely scanning during a period P each such section of the material by means of radiant energy capable of being modulated by said sheet material, and by receiving said modulated energy on at least one photocell thereby to produce at said at least one photocell at least one train of measurement signals V_m periodically recurring in response with the scanning of the material and which vary in intensity as an indication of the presence of said defects, wherein the S/N ratio of those having a S/N ratio of greater than one is improved by electronic correlation, the improvement wherein said correlation comprises the following steps:

delaying the measurement signals V_m in the train during one scan over a time delay t corresponding with the scanning period P;

multiplying the measurement signals during a following scan with a factor that is proportional to the corresponding delayed signals, and is greater than 1;

delaying the thus multiplied signals over said time delay t and multiplying the measurement signals produced during a subsequent scan with a factor that is proportional to said corresponding previous multiplied signals, and so on for a number of scanning periods.

4,274,749

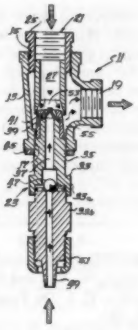
POLYMER DISPERSION DEVICE

Robert J. Lake, Pontiac, and Kimberly L. Chapman, Rochester, both of Mich., assignors to Clow Corporation, Oak Brook, Ill.

Filed Oct. 1, 1979, Ser. No. 80,500

Int. Cl.³ B01F *3/08, 5/04*

U.S. Cl. 366—132 11 Claims



1. A device for dispersing fluid polymeric material in a liquid diluent, which device comprises

a body providing a generally T-shaped interior cavity having a pair of opposed inlets and a side outlet which is located therebetween,

a liquid diluent injection assembly in one of said inlets with the front end thereof located in said interior cavity of said body,

a polymer injection assembly in said other inlet with the front end thereof located in said interior cavity,

the juxtaposition of said front ends of said injection assemblies within said interior cavity being such as to create a zone where countercurrently flowing diluent and polymeric material are pre-mixed and also being such as to create an orifice there between wherein the polymeric material is subjected to high shear forces, and

means for adjusting the relative positions of said injection assemblies within said interior cavity to control diluent flow rate by changing the size of said orifice, whereby the dilute stream exiting from said side outlet contains polymeric material which has been dispersed into the diluent without substantial degradation of the polymer chain length.

4,274,750

GRAIN STIRRER DRIVE ASSEMBLY

Edward H. Smit, Sheffield, Iowa, assignor to Sukup Manufacturing Co., Sheffield, Iowa

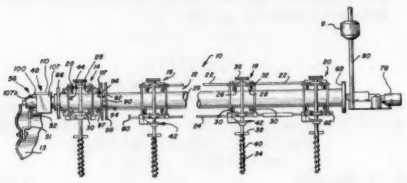
Filed Sep. 7, 1978, Ser. No. 940,436

Int. Cl.³ B01F *7/24*

U.S. Cl. 366—261 8 Claims

1. In apparatus for moving grain within a storage bin comprising a laterally extending sweep member suspended at an

inner end portion by a pivotal support means and at an outer end portion by a track means secured to the storage bin; said sweep member including a sweep drive element in supporting and drive-engaging relation with said track means, and an auger support and movement element rotatable directionally independently of said drive element; at least one stirring member movably carried on said auger support and movement element and depending therefrom; and means for moving said stirring member inwardly and outwardly along said auger support and movement element in accordance with the direction of rotation of said auger support and movement element;



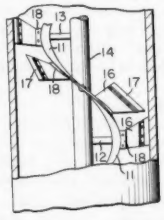
the improvement comprising drive means connected to said support and movement element for selectively effecting rotation and counterrotation thereof, and selective reversible drive means connected for unidirectional rotation drive of said sweep drive element in response to such rotation and counterrotation of said support and movement element whereby said drive element propels the outer end of said sweep member along said track means in one direction while said selective rotation of said auger support and movement element causes selective movement of said stirring member inwardly and outwardly along said sweep member.

4,274,751

SCRAPED WALL AGITATOR

James L. Rector, Vienna, W. Va., and Paul R. Weber, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 26, 1980, Ser. No. 134,228
Int. Cl.[3] B01F *7/24*
U.S. Cl. 366—310 **3 Claims**



1. In a tubular vessel, an agitator to mix the contents of the vessel and to clean the wall of the vessel, which agitator comprises

(a) a shaft axially and centrally positioned in the vessel, which shaft is connectable to an outside rotational drive source,

(b) at least one spiral blade positioned helically around the shaft and supported away from the shaft by rigid supporting arms attached to the blade and the shaft, such blade proportioned in length and diameter to impel the contents in predetermined motion,

(c) a series of straight plate segments spaced at predetermined uniform intervals along the blade and attached to the blade such that the segments extend from the blade toward the interior wall of the tubular vessel, the plane of each plate relative to axis of rotation being approximately the same angle as the helix angle of the periphery of the blade, but the plane of the plate relative to the helical blade being positioned to slant either away from or toward the direction of rotation of the shaft, said plate being constructed to flex with predetermined controlled pressure at the interior wall,

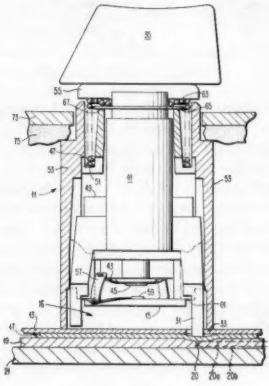
(d) a flexible tip attached to the end of each segment and positioned and contoured such that by overlap of each tip with respect to the adjacent tip ends, all portions of the interior wall of the tubular vessel are contacted during a single revolution of the shaft.

4,274,752

KEYBOARD MULTIPLE SWITCH ASSEMBLY

Daniel L. Huber; Thomas M. Paulson, and James M. Williams, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 2, 1979, Ser. No. 25,825
Int. Cl.[3] B41J *5/08*
U.S. Cl. 400—477 **8 Claims**



1. A keyboard switch assembly comprising:

a plurality of manually movable keys;

a capacitive switch assembly including a circuit board having individual circuit elements associated with individual keys, plural members each responsive to movement of an associated keybutton for moving relative to the associated individual circuit elements, capacitive sensing means for sensing a change in relative position between individual ones of said plural members and said associated individual circuit elements;

a contact switch located below said circuit board and including a grounded planar member forming a first switch member and a ground plane electrical shield for said capacitive switch assembly, a second switch member having an electrical potential applied thereto, sensing means for sensing contact between the first and second switch members; and

means extending through said circuit board and responsive to further movement of an associated keybutton for causing contact between said first and second switch members.

4,274,753

NON-ORAL COMMUNICATION DEVICE

David L. Brown, R.R. 1, Box 126, Park Rapids, Minn. 56470

Filed Oct. 2, 1978, Ser. No. 947,474
Int. Cl.[3] B41J *5/30*
U.S. Cl. 400—87 **9 Claims**

1. A non-oral communication device comprising:

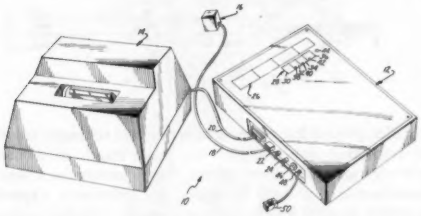
a single electrical switch actuable by an operator and movable between a first and a second position;

a memory for storing a plurality of plural word messages at

a plurality of locations indexed by plural digit numbers, said memory being capable of storing said messages at locations indexed by numbers having at least three digits;

a selector circuit for selecting one of said plural word messages by its indexed plural digit number;

said selector circuit including numeral display means actuated by said switch, said numeral display means having at least three digit locations at which numerals can be displayed, means for cyclically indicating different numerals at each of said at least three digit locations, means actuated by said switch for choosing a displayed numeral at each of said at least three digit locations, said cyclical indicating



means cyclically indicating different numerals at one of said at least three digit locations until said switch actuates said choosing means to choose a numeral being indicated, said numeral display means displaying a numeral chosen, said cyclical indicating means cyclically indicating different numerals at a succeeding digit location after a numeral has been chosen at a preceding digit location, and means actuated by said switch for transmitting the numerals chosen to said memory after a complete plural digit number of a desired plural word message has been chosen; and

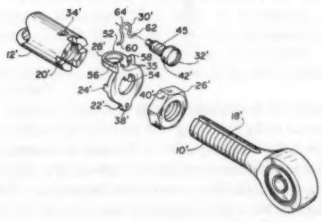
means for signaling a message display means to display a selected plural word message indexed by a chosen plural digit number.

4,274,754

DOUBLE LOCKING DEVICE

Murray Cohen, Seaford, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 31, 1979, Ser. No. 89,771
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—14 **7 Claims**



1. Means to double lock a connection, said means comprising:

a first part to be used in the connection;

a second part to be joined with the first part in making the connection;

a lock key to be interposed with said first part and said second part, said lock key having a shelf to extend over one of said first part or said second part;

a jam nut to locate said lock key, said jam nut having a peripheral surface of a predetermined diameter which is greater than the internal diameter prescribed by the shelf; and

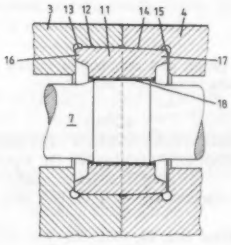
a dog screw insertable through the shelf to said first part or said second part whichever lies thereunder, to secure said lock key.

4,274,755

RIGID COUPLING, ESPECIALLY FOR TURBOGENERATORS

Felix R. Bernasconi, Zollikerberg, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 30, 1979, Ser. No. 34,497
Claims priority, application Switzerland, Jun. 30, 1978, 7147/78
Int. Cl.³ F16D *1/02*
U.S. Cl. 403—337 **7 Claims**



1. A rigid coupling for joining together first and second shaft ends, especially in a turbomachine, comprising:

a first flange fixed with respect to the first shaft end;

a second flange fixed with respect to the second shaft end;

at least one annular shearing bushing arranged between said first and second flanges, the at least one shearing bushing having a first portion received within a bore of the first flange and a second portion received within a bore of the second flange;

said first portion including a generally cylindrical outer wall surface having a diameter which is greater than the diameter of the bore in the first flange, and which first portion is inserted into said bore by means of a shrink fit;

said second portion including a generally conical outer wall surface and said bore in the second flange having a conical shape which substantially corresponds to the conical shape of the outer wall surface of said second portion; and

means for axially urging the first and second shaft ends together.

4,274,756

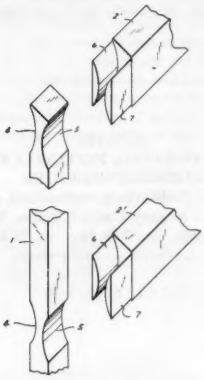
FIXED JOINT, ESPECIALLY FOR JOINING STRUCTURAL PARTS OF WOODEN FURNITURE

Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Schlaap-Möbel GmbH & Co., KG, Neu-Anspach, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,874
Int. Cl.³ F16B *12/00*
U.S. Cl. 403—382 **15 Claims**

1. A joint of a plurality of construction pieces, comprising a first joint portion including a pair of concave recesses provided on opposite sides of one of said construction pieces; a second joint portion including a pair of facing convex surfaces provided on at least one of the other construction pieces, said

convex surfaces snugly fitting said concave recesses when said other construction piece is joined transversely to said one



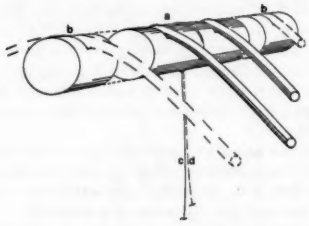
construction piece; and connecting means for securing said convex surfaces in said concave recesses.

4,274,757

IMMERSION/SUSPENSION METHOD FOR THE SUBMARINE DEPLOYMENT OF HIGH VOLTAGE TRANSMISSION CABLE

Richard D. Francisco-Arnold, P.O. Box 452, Bronxville, N.Y. 10708

Filed Oct. 14, 1976, Ser. No. 732,211
Int. Cl.[3] F16L *1/04*
U.S. Cl. 405—161 **2 Claims**



1. A bouyant support apparatus for the subsurface suspension deployment of a number of thermally active electrical power transmission cable; and which comprises at least a single flotation element provided with supporting means and attachment recepticle projecting out from and attached to the flotation element, and interconnectable to other like means to form a network support configuration so as to space the said cable from one another, where multiply employed, at a point adjacent to the flotation element; and additionally providing attachment means for securing the support means to the flotation means, as well as one another.

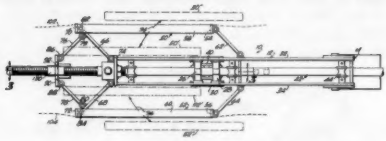
4,274,758

DEVICE TO SECURE AN UNDERGROUND PIPE INSTALLER IN A TRENCH

William O. Schosek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Continuation-in-part of Ser. No. 68,151, Aug. 20, 1979. This application May 12, 1980, Ser. No. 149,172
Int. Cl.[3] F16L *1/02*
U.S. Cl. 405—184 **9 Claims**

1. A device to secure an underground pipe installer relative to opposed generally vertical side walls of an operating trench, the pipe installer device being of a type which includes reversible power operated means to drive a rod assembly, formed of a plurality of coupled rod lengths, forwardly through the ground from the operating trench for penetration into a target trench, in a forward drive mode, and to withdraw the rod assembly, in a reverse drive mode, with a pipe or other conduit means attached to a leading end thereof, into an installed position within the hole formed in the ground by the rod assembly, the device to secure comprising a pair of elongated abutment members in a generally parallel arrangement outwardly of respective side walls of a main length of the underground pipe



installer, pivotal link means connecting said abutment members to respective side walls of the main length in a manner whereby said pair of elongated abutment members may be synchronously pivoted to oppositely outwardly expanded, generally parallel positions, from inwardly retracted positions, adjacent to the main length; and means to connect a trailing end of a hole forming rod length, operably engaged in the installer, to said link means in a manner so as to forcably drive said abutment members from said retracted positions to said expanded positions when the power operated means is operated in the forward drive mode; and lock means to secure said abutment members in said expanded positions.

4,274,759

NON-RETURN HOT WATER DIVING SUIT

Richard W. Long, and Robert T. Stinton, both of San Diego, Calif., assignors to Diving Unlimited International, Inc., San Diego, Calif.

Continuation of Ser. No. 835,679, Sep. 22, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,200
Int. Cl.[3] B63C *11/02*
U.S. Cl. 405—186 **11 Claims**

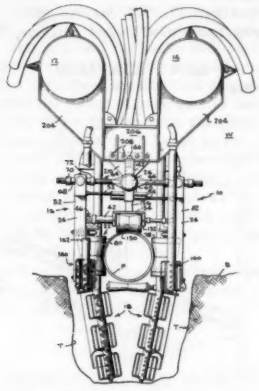
1. A non-return hot water diving suit, comprising:
a waterproof body encasing suit providing a sealed interior to protect the body against cold exterior water;
the suit having inlet means for connection to a supply of hot water to admit the hot water into the interior of the suit;
the suit further having a single hot water outlet for allowing hot water to be exhausted from the interior of the suit therethrough, the outlet including a positive shut-off valve; and
flow restricting means disposed between the interior of the suit and the outlet for allowing hot water to be exhausted from the interior of the suit through the outlet at a predetermined substantially constant first rate and for preventing cold exterior water from surging into the interior of the suit through the outlet at a second rate significantly greater than the first rate due to pumping action in the suit or failure of the hot water supply.

4,274,760

SELF-PROPELLED UNDERWATER TRENCHING APPARATUS AND METHOD

Robert M. Norman, P.O. Drawer 53475, Lafayette, La. 70501

Continuation of Ser. No. 829,350, Aug. 31, 1977, abandoned.
This application Feb. 2, 1979, Ser. No. 8,849
Int. Cl.[3] E02F 5/02, 5/14
U.S. Cl. 405—163 68 Claims



1. An underwater trenching apparatus for burying pipeline and the like comprising:

a frame for positioning about the pipeline to be buried,

said frame including frame members positioned on each side of said pipeline,

roller means connected to at least one of said frame members for engagement with said pipeline,

pivot means positioned on said frame for pivoting each said frame member about a substantially horizontal axis parallel to the pipeline transversely toward and away from roller engagement with said pipeline,

means operative upon said frame for laterally moving said pivot means and said horizontal axis to shift said frame members transversely to the axis of the pipeline, and

cutting means secured to said apparatus for cutting a trench in a formation whereby said pipeline is buried.

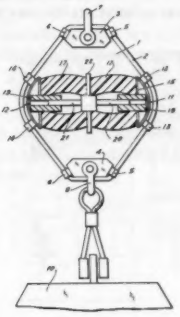
4,274,761

SUSPENSION ARRANGEMENT FOR SUSPENDING OF VIBRATING ELEMENTS AND THE LIKE

Kurt Boguth, Ratingen, Fed. Rep. of Germany, assignor to Tuenkers GmbH, Ratingen, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,717
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823953
Int. Cl.[3] E02D 7/00
U.S. Cl. 405—232 19 Claims

1. A suspension arrangement for suspending a vibratory ram and the like vibratory devices or bodies, comprising a sling element having two first upper and lower ends spaced from one another in a vehicle first direction and two second lateral ends spaced from one another in a second transverse direction which is transverse to said first vertical direction; carrying plates mounted at the respective first ends; first and second suspending means each connected to one of said carrying plates so that, when said sling element is suspended from one of said suspending means and a vibrating element is suspended from the other of said suspending means, said sling element varies its shape whereby the respective distances between said first ends and between said second ends are varied; and a dampening element located between said second ends of said sling element and movable in said transverse direction so that when said sling element is loaded by the vibrating element suspended on said one first end and the distance between said



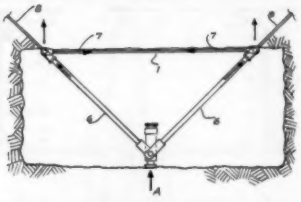
second ends is varied, a compressing force acts upon said damping element in said transverse direction.

4,274,762

PRESTRESSED ROCK TRUSS

Stanley F. Johnson, 80 Sydney St., Muswellbrook, New South Wales 2333, Australia, assignor to Frederick Johnson, Lithgow, Australia

Filed Feb. 26, 1979, Ser. No. 15,034
Claims priority, application Australia, Mar. 3, 1978, PD3580
Int. Cl.[3] E21D 20/00
U.S. Cl. 405—259 5 Claims



1. A method of supporting a roof of a mine gallery comprising the steps of placing an elongated truss with toggles at each end thereof against the roof to be supported; exerting a force against the toggles such that the truss is under tension; drilling bolt holes in the roof, using a hole in each toggle as a guide, at an angle to the roof; installing roof bolts into said bolt holes through said holes in the toggles such that the roof bolts extend beyond the width of the mine gallery; and securing said roof bolts to said toggles and in said bolt holes.

4,274,763

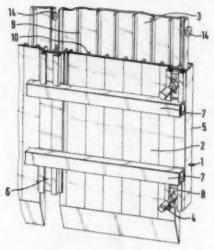
EXCAVATING SHEETING UNIT

Josef Krings, Hans-Boeckler-Str. 23, D-5138 Heinsberg-Oberbruch, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,463
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816709
Int. Cl.[3] E21D 5/00
U.S. Cl. 405—282 16 Claims

1. An excavation sheeting unit having an outside adapted to bear against a trench surface or the like comprising a pair of spaced generally vertically disposed parallel guide rails, means for rigidly connected together said guide rails, a pair of relatively large sheeting plates each having opposite upstanding lateral edges, said lateral edges defining means for vertical sliding guiding motion relative to associated ones of said guide rails whereby said sheeting plates move in relative parallel

sliding motion with respect to each other, at least one supporting strut associated with each guide rail and being disposed generally transverse thereto, means for slideably mounting each supporting strut relative to its associated guide rail for



movement generally parallel to the relative sliding motion of said sheeting plates, and means for locking at least one of said sheeting plates in any of several predetermined positions of adjustment relative to the other of said sheeting plates.

4,274,764

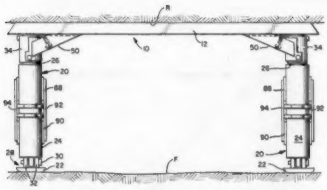
MINE ROOF SUPPORTING SYSTEM

Paul F. Curry, Box 775, Glade Spring, Va. 24340

Filed Dec. 26, 1979, Ser. No. 107,459

Int. Cl.³ E21D *15/44*

U.S. Cl. 405—291 **10 Claims**



1. In a self-advancing mine roof support system having a plurality of roof support units each including a generally horizontal beam supported at opposite ends by a pair of extensible, vertically oriented props so that any one of said units may be adjusted between a roof supporting condition in which the beam thereof is advanced upwardly by the props of that unit into engagement with a mine roof and a retracted condition in which the beam thereof is lowered away from the mine roof, the roof support units being arranged in tandem so that the several horizontal beams of the system are oriented in generally parallel relationship to each other and in transverse relationship to the direction of system advance under a mine roof, a pair of extensible struts extending between and connected to the respective props of each successive two of said units so that any one of said units may be adjusted to said retracted condition and advanced by said struts acting against another of said units adjusted to said roof supporting condition, and pivotal means connecting the upper end of each prop to said beams, the improvement comprising:

a pair of stabilizing brackets to yieldably retain the props and beam of each roof support unit in perpendicular relationship when each unit is adjusted to said retracted condition and to allow the props and beams of each unit to deflect from a perpendicular relationship when adjusted to said roof supporting condition;

each of said stabilizing brackets including a rigid angular member having a pair of mutually perpendicular abutment surfaces, one such surface to engage the beam of each unit and the other of such surfaces to engage one of the props of each unit, and tension spring means to bias said abutment surfaces into engagement.

4,274,765

MINING EQUIPMENT

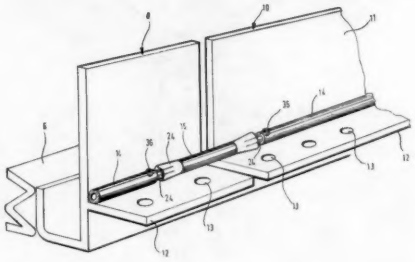
Adam M. Spence, Doncaster, and James R. Goff, Brockenhurst, both of England, assignors to Winster Engineering Limited, Ilkeston, England

Filed Nov. 17, 1978, Ser. No. 961,913

Claims priority, application United Kingdom, Nov. 19, 1977, 48282/77

Int. Cl.³ E21C *35/20*

U.S. Cl. 405—303 **10 Claims**



1. In a system for the supply of fluid under pressure to machinery of an underground mine working, the improvement wherein lengths of fixed conduit are permanently or semi-permanently secured to some at least of the individual sections of a mining conveyor at the underground mine working and, to the assembly of said sections, said lengths of fixed conduit are secured together by lengths of flexible conduit and by the use of quick release couplings, inter-engageable elements of which are secured to the ends of the fixed conduits and to the ends of the flexible conduits respectively.

4,274,766

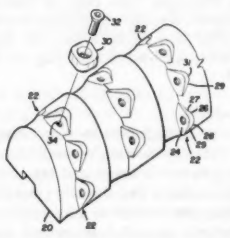
CUTTER ASSEMBLY FOR BROACHING

Arthur J. Raupp, Jr., Milford; Michael N. Gerasin, Drayton Plains, and M. Leonard Thompson, Livonia, all of Mich., assignors to The Valeron Corporation, Troy, Mich.

Filed Nov. 28, 1979, Ser. No. 98,228

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—15 **2 Claims**



1. A broaching tool for finishing a portion of a cylindrical surface up to and including a complete cylinder, said broaching tool comprising:

a cutter body including a plurality of pockets formed therein, each pocket having sidewalls defining planar regions and an undercut radiused corner connecting said planar regions, said pockets being arranged on said cutter body in helical arrays with successive pairs of helical

arrays having increasing radii as measured from the longitudinal axis of the cutter body;

a plurality of corresponding cutting inserts mounted to said pockets, each insert including a center, a top planar surface, a bottom planar surface, and a peripheral surface, the peripheral surface of each insert making an angle of less than 90° with the longitudinal axis of said cutter body, said peripheral surface bounding an inscribed circle which has a center coincident with the center of said insert, each of said inserts including a plurality of flat planar surfaces that are parallel to the longitudinal axis of said insert and a plurality of bulges, said flat planar surfaces being substantially tangent to said inscribed circle and each bulge being defined by a corresponding center of curvature and radius of curvature, the radius of curvature of each bulge being at least four times greater than the distance from the center of curvature of each bulge to the center of said inscribed circle, the top planar surface and bottom planar surface of each insert being substantially perpendicular to the longitudinal axis of said peripheral surface and the intersection of the top planar surface and bottom planar surface with the bulges on said peripheral surface defining a plurality of cutting edges; and

said flat planar surfaces and pocket planar regions providing an indexing mechanism for each insert whereby each insert is indexable in multiples of 90°.

4,274,767

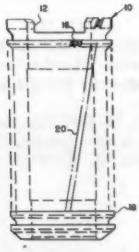
HELICAL TOOTHED BROACH

Eugene J. Bistrick, and Axel B. Abrahamsson, both of Warren, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 10, 1979, Ser. No. 102,119

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—18 **9 Claims**



1. A finishing broach for finish cutting helical teeth of a work piece, comprising an elongated broach body having a multiplicity of series of helically aligned teeth arranged to finish cut previously formed teeth on a work piece, all of said teeth having side surfaces conforming to the profile shape of the spaces between adjacent teeth on the work piece, each tooth having side surfaces helically inclined to the longitudinal axis of the body to define obtuse and acute included angles with its front face;

the leading section of said broach having teeth which at the acute included angle side thereof have cutting edges which are progressively stepped laterally and backed off to take sequential cuts for substantially the full height of the adjacent sides of the work piece teeth,

the teeth of said leading section at the obtuse included angle sides thereof being neither laterally stepped nor backed off and which therefore provide guide surfaces in true helical alignment which cooperate with the adjacent side surfaces of the work piece teeth,

the following section of said broach having teeth all of which at the obtuse included angle side thereof are laterally stepped and backed off to take sequential cuts for substantially the full height of the adjacent sides of the work piece teeth,

the teeth of the following broach section at the acute included angle side thereof comprising in sequence a first few teeth which are not laterally stepped but in which the side surfaces are backed off,

a single following tooth which at its acute included angle side is neither laterally stepped nor backed off, but has its side surface substantially chamfered rearwardly from its front surface,

the remaining teeth of said following section at the acute included angle side thereof being neither laterally stepped nor backed off to provide guide surfaces in true helical alignment which cooperate with the adjacent side surfaces of the work piece teeth.

4,274,768

TAPPING SPINDLE

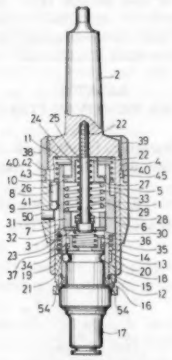
Taizo Kato, 3007-104, Obatahigashijima, Moriyamaku, Nagoya, Japan

Filed May 14, 1979, Ser. No. 38,704

Claims priority, application Japan, May 15, 1978, 53-65587[U]

Int. Cl.³ B23G *1/46, 3/00*

U.S. Cl. 408—142 **3 Claims**



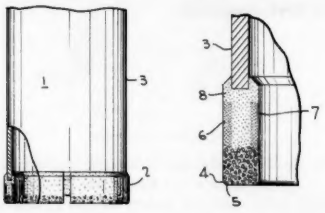
1. A tapping spindle comprising a first cylinder having a shank at the top thereof, opening at the bottom thereof and formed with at least one axial slot in a side wall thereof, a second cylinder reciprocatable and rotatable within said first cylinder and spring-urged axially inwardly of said first cylinder; said second cylinder having at leat one axial groove in an outer wall thereof, said groove opening at one end thereof, the open end having one edge of a substantially right angle and the outer edge contoured off; and a slidable roller normally engaging both said slot and groove and spring urged axially outwardly of said first cylinder

characterized by a sleeve reciprocatable around said first cylinder and having a radial pin fixed thereto and projecting radially inward to reciprocatably engage said slot; said pin stopping said roller from moving axially inwardly of said groove; and means for selectively holding said sleeve at predetermined axially various positions relative to said first cylinder.

4,274,769
IMPREGNATED DIAMOND DRILL BIT CONSTRUCTION

Leonid Multakh, Scranton, Pa., assignor to Acker Drill Company, Inc., Scranton, Pa. and Acker Drill Company, Inc., Scranton, Pa.

Continuation-in-part of Ser. No. 898,687, Apr. 21, 1978, Pat. No. 4,211,294. This application May 19, 1978, Ser. No. 907,507
Int. Cl.³ B23B *27/20*
U.S. Cl. 408—145 **9 Claims**

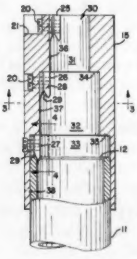


1. An impregnated diamond drill bit comprising: a generally cylindrical crown structure having a lower portion forming a cutting surface, said lower portion containing diamond particles randomly dispersed within a metal matrix and said crown structure having outside continuous sections formed by a layer of a material that is more wear resistant than said metal matrix, said outside layer lying outside of a central core section of said crown structure and being arranged above said cutting surface portion along portions of the circumferential side wall of said crown structure between water pathways in said crown structure, the thickness of said outside layer being only a small fraction of the thickness of said crown structure; and a shank member attached to said crown structure at its upper end.

4,274,770
HAND-HELD BURR REMOVER FOR CONDUIT AND PIPE

Karl Singer, 2282 Thorntree, Palatine, Ill. 60067, assignor to Karl Singer, Palatine and Wagner & Aubel, Ltd., Chicago, both of, Ill.

Filed Nov. 9, 1979, Ser. No. 93,026
Int. Cl.³ B23D *79/00*
U.S. Cl. 408—211 **5 Claims**

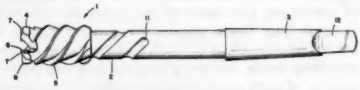


1. An apparatus for deburring leading edges of conduits and the like, said apparatus being capable of deburring conduits of a plurality of sizes, said apparatus including a plurality of successively smaller chambers, each communicating directly with adjacent chambers and being of a size approximating that of a standard size conduit, the largest of said chambers having an external opening, each chamber having a cutting means with a blade oriented towards said external opening, whereby the leading edges of any conduits of said standard sizes may be inserted into said external opening to engage one of said blades and be deburred upon the rotation of said apparatus relative to said conduit.

4,274,771
BORING REAMER WITH END MILL CUTTERS

Takayuki Nishimura, Nara, Japan, assignor to G. N. Tool Inc., Nara, Japan

Filed Jun. 28, 1979, Ser. No. 52,840
Int. Cl.³ B23B *51/00*; B26D *1/12*
U.S. Cl. 408—230 **1 Claim**

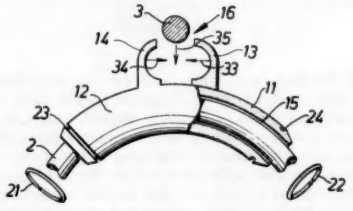


1. A boring reamer having a cutting portion comprising:
at its forward end, a end mill cutter portion formed with straight flutes; and
to the rear of said end mill cutter portion a fluted member portion larger in diameter compared to said end mill cutter portion and from four to five times as long, said fluted reamer portion being provided with an ultra-left-hand twist right-hand cut fluted cutting edge with a helix angle of about 50°–70°, the forward portion of said fluted reamer cutting edge having a chamfer angle of about 30°–20° and relieving angle of approximately 1°–10° and the rear portion of said fluted reamer cutting edge having a plurality of unrelieved burnishing portions each of from 0.1–0.5 mm in width.

4,274,772
HOLDER FOR CHUCK KEY

Sven H. Widigs, Gustafs, Sweden, assignor to Lars-Gösta Brändström and Karl-Peter Brändström, both of Söderhamn, Sweden

Filed Feb. 15, 1980, Ser. No. 121,731
Claims priority, application Sweden, Feb. 15, 1979, 7901356
Int. Cl.³ B23B *45/00*
U.S. Cl. 408—241 R **4 Claims**



1. A chuck key holder for arrangement on a flexible power supply lead to rotatably carry a chuck key for adjusting the clamping jaws of a chuck on an electrically or pneumatically driven machine, such as a hand-held drilling machine, the holder including a channel for accommodating the power supply lead, and a mounting for the chuck key, characterized in that the holder has a basic structure consisting of two identically alike basic parts (**11**, **12**), of which one (**11**) is turned 180° in relation to the other (**12**), there being formed in each part (**11**, **12**) one half of the channel (**15**) for the lead and one half of the chuck key mounting (**16**), there also being fastening means arranged for keeping the basic parts (**11**, **12**) together, each said holder basic part (**11**, **12**) having a pair of surfaces adapted to slideably engage a mating oppositely facing pair of surfaces on the other basic part, and each basic part being slideable in respect to the other along said pairs of mating surfaces while a

flexible lead of proper size is received therein, said chuck key mounting (**16**) being formed in portions (**13, 14**) projecting from said basic parts (**11, 12**), the common contact surfaces of the portions (**13, 14**) being perpendicular to the plane of partition for the basic parts (**11, 12**), in which is formed the channel (**15**) accommodating the lead (**3**), and facing each other, and formed in relation to each other and said pair of slideably engageable surfaces so as to limit the movement of said basic parts along the latter surfaces and to rotatably retain a chuck key when said portions **13, 14** engage, and attachment means comprising resilient rings (**21, 22**) receivable in mating grooves on said basic parts said grooves being positioned on the latter parts so as to be in proper relationship when said common contact surfaces of said key mounting portions are engaged.

4,274,773

ROTARY INDEX TABLE

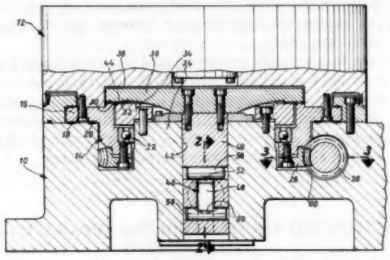
Friedrich Burkhardt, Eislingen/Fils, and Hans Staiger, Göppingen, both of Fed. Rep. of Germany, assignors to Ex-Cell-O GmbH, Eislingen/Fils, Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,057

Claims priority, application Fed. Rep. of Germany, May 3, 1978, 2819412

Int. Cl.[3] **B23Q** *3/18*

U.S. Cl. 409—221 **17 Claims**



1. Rotary index table, comprising: a stationary table housing with a rotatable table. plate for workpiece accomodation, a drive means for driving said rotatable table plate, said drive means having a worm gear arranged concentrically to the axis of said table plate and which engages a drive worm located on a drive shaft of the drive means, a plurality of three concentrically arranged Hirth-type serrations, a first serration of which being provided on said table housing, a second on said table plate in the same plane as said first serration, and a third serration adjacent to said first and second serrations being essentially non-rotatable but axially adjustable and being so designed that simultaneously with the two other Hirth-type serrations it can be engaged or disengaged for locking or unlocking said table, whereby, the table plate in the disengaged condition of the first and second Hirth-type serrations can steplessly be rotated by the drive means and be fixed in at least those angular positions that are established by the pitch of the Hirth-type serrations, characterized in that drive worm (**28**) can radially be deflected in the direction of worm gear (**26**) by means of an actuating mechanism and be brought under load into contact with the flanks of worm gear (**26**).

4,274,774

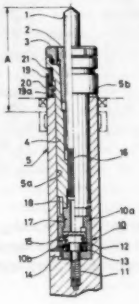
TOOL-FITTING DEVICE

Minoru Haga, and Kunio Kondo, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Fujiseiko K.K., both of, Japan

Filed May 18, 1978, Ser. No. 907,208

Int. Cl.[3] **B23B** *31/06;* **B23C** *5/28*

U.S. Cl. 409—232 **3 Claims**



1. A tool-fitting device for a tool, comprising:

a spindle with an axially extending bore having a bottom surface portion;

a tool-fitting body separate from said tool and said spindle, a clamp piece inserted into said spindle bore, one end of said clamp piece being attached with the tool-fitting body which holds said tool and the other end of said clamp piece including a pair of anti-pull-out parts consisting of an axial rib and a circumferential rib;

a clamp socket, separate from said spindle, fixed to the bottom of said spindle bore and disposed between said other end of said tool-fitting body and said spindle bottom surface portion, said socket having two anti-pull-out bosses protruding in the radial direction and engaging the anti-pull-out parts of said clamp piece;

a screw member for decuring said clamp socket to said spindle;

a rotation-restraining engaged means which is restrained in its rotation relative to said spindle;

a rotation-restraining engaging means formed at one end of said body and restrained in its rotation relative to said tool-fitting body and, by engaging said engaged means, restrains the rotation of said tool-fitting body with respect to said spindle,

said engaging means including a switch collar which is axially slideable relative to said tool-fitting body and is spring urged in the direction of said engaged means.

4,274,775

BROACHING MACHINE COMPOUND SHUTTLE

Vincent J. Girardi, Grosse Pointe Woods, Mich., assignor to The Babcock & Wilcox Company, New Orleans, La.

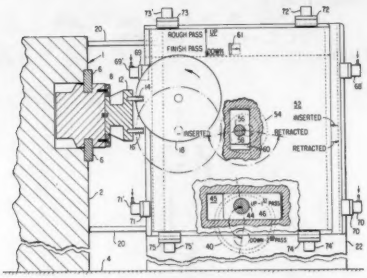
Filed Oct. 4, 1979, Ser. No. 81,706

Int. Cl.[3] **B23D** *41/06*

U.S. Cl. 409—251 **4 Claims**

1. A compound shuttle for a broaching machine having a plurality of spaced parallel broach trains secured to the face of a common slide which is reciprocable in stationary ways in forward and reverse passes past a work-piece, comprising, a first shuttle table, a support structure in which said first shuttle table is slidably mounted in a plane parallel to the face of said slide, a second shuttle table on which said work-piece is fixed slidably mounted on said first shuttle table in a plane transverse to said first plane, means for positioning said first shuttle table from a first fixed position wherein said work-piece is axially aligned with one of said broach trains to a second fixed position

wherein the work-piece is axially aligned with another one of said broach trains and means for positioning said second shuttle table from a first fixed position wherein the work-piece is in the



path of a broach train during forward passes of the slide to a second fixed position wherein the work-piece is out of the paths of the broach trains during reverse passes of the slide.

4,274,776

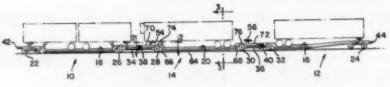
DEPRESSED CENTER SPINE PIGGYBACK/CONTAINER RAILCAR

H. Neil Paton, 2521 W. Montlake Pl., Seattle, Wash. 98112, and John B. Skilling, 3000 Webster Point R., Seattle, Wash. 98005

Filed Aug. 3, 1977, Ser. No. 821,539

Int. Cl.[3] **B60P** *3/06;* **B61D** *3/16, 17/00;* **B61F** *3/08*

U.S. Cl. 410—57 **26 Claims**



1. A railcar, comprising:

a frame; and

a four point truck suspension operatively associated with said frame;

said frame including:

a spine, having a depressed center portion vertical load transmitting means projecting transversely from said spine adjacent both ends thereof for transmitting only vertical loads to said truck suspension at four vertical load support points, the load support points of each said pair being spaced apart in opposed transverse alignment with the longitudinal axis of said spine and constituting the sole load transmitting means projecting transversely from said spine adjacent both said ends, said depressed portion of the spine being located between said vertical load transmitting means;

first means for supporting a vertical load projecting from the depressed portion of said spine between said pairs, said means being adapted to support said load substantially at the level of said depressed portion, and

second means for supporting a vertical load projecting from said spine between one said pair and the adjacent end of said spine, whereby simultaneous vertical loads on said first and second vertical load support means establish opposed bending moments in said frame.

4,274,777

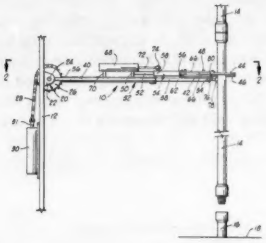
SUBTERRANEAN WELL PIPE GUIDING APPARATUS

Orville C. Scaggs, Box 430, Lindsay, Okla. 73052

Continuation-in-part of Ser. No. 931,150, Aug. 4, 1978. This application May 24, 1979, Ser. No. 42,001

Int. Cl.[3] **E21B** *19/14*

U.S. Cl. 414—22 **6 Claims**



1. An improved pipe guiding apparatus for vertically aligning pipe section joints in a derrick having a worktable and an elevator for vertically suspending at least one pipe section above said worktable comprising:

rotary axle means for horizontal attachment to the derrick at a location above the worktable thereof;

a frame having a forward end and a rearward end, the rearward end of said frame being attached to said rotary axle means whereby when said axle means are rotated the forward end of said frame swings in a vertical arc;

means for rotating the axle of said rotary axle means to rotate said frame;

a pair of guide jaws pivotally attached to the forward end of said frame;

cylinder means attached to said guide jaws and to said frame for moving said guide jaws between open and closed positions; and

means for remotely operating said means for rotating said axle and said cylinder means so that said axle can be selectively rotated to position said frame whereby said guide jaws are adjacent a vertically suspended pipe section and said guide jaws are thereafter closed to secure said pipe section along a preselected vertical alignment.

4,274,778

MECHANIZED STAND HANDLING APPARATUS FOR DRILLING RIGS

Paul S. Putnam, 931 S. Idaho St. #130, La Habra, Calif. 90631; Charles F. Cowgill, 518 Whitten Way, Placentia, Calif. 92670, and Frank J. Di Bella, 3950 Los Feliz Blvd. #109, Los Angeles, Calif. 90027

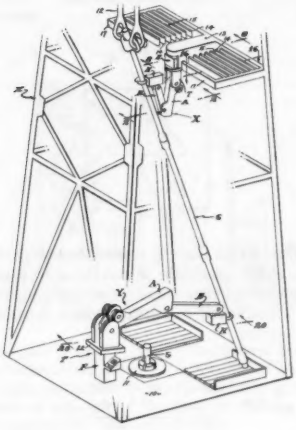
Continuation of Ser. No. 833,145, Sep. 14, 1977, abandoned. This application Jun. 5, 1979, Ser. No. 45,642

Int. Cl.[3] **E21B** *19/15*

U.S. Cl. 414—22 **22 Claims**

1. Apparatus for racking stands in a derrick, and including; a turret mounting means disposed to turn on a vertical axis trunnion within the derrick and in spaced relation to said stands, actuating means to turn the turret mounting means on said vertical axis trunnion, an inner arm swinging from the turret mounting means on a first horizontal axis bearing fixedly related to the turret mounting means to turn therewith, an outer arm swinging from the end of the inner arm remote from the first mentioned horizontal axis bearing and on a second horizontal axis bearing fixedly related to the inner arm to swing therewith, actuating means within one of said arms and comprising a double acting means simultaneously shifting spaced racks engaged with primary and secondary gears positively driving the inner and outer arms respectively to angularly displace the inner arm from said vertical axis of the trunnion at a rate of movement and to angularly displace the outer

arm from parallel relation to the said inner arm at a rate of movement twice that of said rate of movement of the said inner arm, a gripper head means engageable with said stands and pivoting at the end of the outer arm remote from the second mentioned horizontal axis bearing on a third horizontal axis



bearing fixedly related to the outer arm to swing therewith, said first second and third horizontal axes being parallel one with the other, and means to maintain the gripper head means normal to a vertical axis in parallel relation to the vertical turret mounting means axis trunnion.

4,274,779

HANDLING PLANT FOR CEMENT TILES OR THE LIKE WITH THE AID OF TRAYS UPON WHICH THE TILES ARE PLACED FOR SEASONING

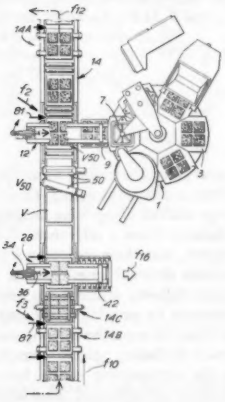
Enrico Longinotti, Via T. Bertelli 2, Florence, Italy

Filed Mar. 26, 1979, Ser. No. 23,783

Claims priority, application Italy, Mar. 30, 1978, 9398 A/78

Int. Cl.³ B65G *60/00*

U.S. Cl. 414—32 **8 Claims**



1. An improved apparatus, for handling articles of manufacture, such as cement tiles or the like and transporting the articles sequentially through a plurality of operating stations, comprising: a first conveying means, a charging station disposed adjacent said first conveying means, a plurality of trays adapted to be disposed on said first conveying means whereby said first conveyor means serially advances through trays through a first conveying path toward said charging station, said charging station including means overlying said first conveying path for stacking said articles onto the trays in said charging station, a tray station disposed downstream of said charging station, said tray piling station having means for stacking a plurality of trays containing said stacked articles one upon the other as the respective trays pass through said charging station, a second conveyor means having an end portion adapted to receive a plurality of stacked trays containing subsequently processed articles, a tray unpiling station associated with said second conveyor means, an article pick-up station disposed downstream from said unpiling station whereby the processed articles are removed from said unpiled trays, said tray unpiling station including means for sequentially removing said trays from said stacked trays whereby said unstacked trays are sequentially advanced toward said pick-up station to effect the removal of the articles from said trays, and said emptied trays being recycled to said first conveyor means on an interconnecting conveyor for advancement toward said charging station, and means for selectively moving said trays into said charging station through steps equal to submultiples of the tray length for sequentially receiving two or more stackings of said articles from said charging station.

4,274,780

APPARATUS FOR STACKING LAYERS OF OBJECTS

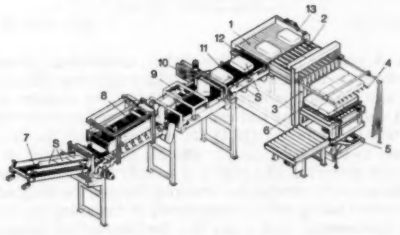
Günther Kaul; Wilfried Grünert, and Wilhelm Aufenvenne, all of Beckum, Fed. Rep. of Germany, assignors to Möllers Maschinenfabrik GmbH, Beckum, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,733

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831621

Int. Cl.³ B65G *57/24*

U.S. Cl. 414—64 **12 Claims**



1. Apparatus for stacking objects such as bags of material, on a loading surface comprising means for conveying the objects one after another from a supply source, an inlet roll track arranged to receive the objects from said conveying means and including an abutment member acting as a stop for the objects moving onto the inlet roll track, an intermediate support member including laterally spaced fixed supporting elements arranged to receive rows of the objects from said inlet roll track for assembling the rows into a layer, a stack support member for receiving a stack of layers of the objects from said intermediate support member, vertical stripping members located between said intermediate support member and stack support member, and a forklift means movable in a closed path for lifting a layer of objects from said intermediate support member, for moving the layer over said stack support member, for lowering the layer toward said stack support member and for returning into position for lifting another layer from said intermediate support member, wherein the improvement comprises that said inlet roll track comprises a plurality of rollers extending transversely of the direction of movement of said conveying means, said abutment member extending in the same general direction as said rollers and spaced from said conveying means, said rollers being driven at a speed decreasing in the direction toward said abutment member, said abutment mem-

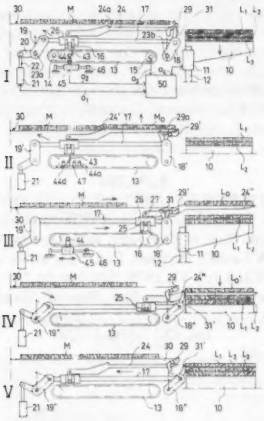
ber being displaceable away from the objects arriving on said rollers from said conveying means for facilitating the movement of a row of the objects on said inlet roll track to said intermediate support member, and said stack support member being vertically movable for receiving individual layers of the objects in approximately the same horizontal plane during progressive formation of a stack on said stack support member.

4,274,781

METHOD AND APPARATUS FOR PACKING TIMBER

Alpo Rysti, Friisilantie 36, 02240 Espoo 24, Finland

Filed Aug. 16, 1979, Ser. No. 67,007
Claims priority, application Finland, Jun. 15, 1979, 791913
Int. Cl.³ B65G *57/10*
U.S. Cl. 414—83 **14 Claims**



1. A process for packeting timber, comprising; advancing the timber in the form of mat (M) with a conveyor (**30**), engaging said mat or a selected portion thereof by transfer means (**24**) and transferring said mat or said selected position thereof to timber lift means (**10,11,12**), and returning the transfer means to its initial position; wherein the movement of said transfer means includes raising of transfer arms, longitudinally reciprocatingly moving and lowering thereof, the longitudinal movement taking place independently of the raising and lowering movement in such a way that the longitudinal reciprocating movement takes place as a linear movement created by an actuator (**13**), and that the lowering and raising movement (**24**) takes place as a rotating movement created by actuators (**18,19,20**), said movements being independent of each other due to glide means (**16,25** and **17,26**) connected at one end of the transfer means.

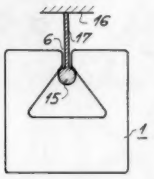
4,274,782

CLIP FOR CARRYING ARTICLES ENGAGING, DISENGAGING AND OVERLAPPING SYSTEM FOR SUCH A CLIP

Yvan de Rancourt de Mimerand, and Jean Goullet, both of Paris, France, assignors to Hotchkiss-Brandt Sogeme H.B.S., Paris, France

Filed Jun. 23, 1978, Ser. No. 918,964
Claims priority, application France, Jun. 28, 1977, 77 19823
Int. Cl.³ G07F *11/42*
U.S. Cl. 414—104 **10 Claims**

1. A clip for carrying articles which forms a member providing a connection between the article and a support, the said clip containing a triangular shaped opening through which the support is inserted, wherein said opening terminates in a slot and has an outline shape which defines an area of increasing size from the slot to the base of the opening, thus enabling said support to be inserted "on the fly", and which results in a configuration of the walls conducive to sliding movement on the said support after its insertion and until a state of equilibrium has been established, said clip being made of a material which on the one hand has an elasticity capable of producing



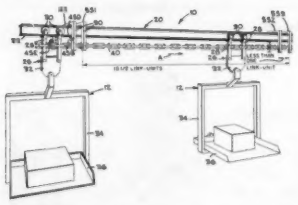
a spring effect which tends to restore the two parts of the clip situated on either side of the slot to the same plane whatever the stresses to which they are subjected and which on the other hand has a coefficient of friction which promotes the said sliding movement.

4,274,783

CHAIN MEASURING AND CONVEYOR CONTROL SYSTEM

Donald E. Eineichner, San Jose, and Barclay J. Tullis, Palo Alto, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 800,834, May 26, 1977, Pat. No. 4,198,758.
This application Aug. 3, 1978, Ser. No. 930,771
Int. Cl.³ B65G *43/00, 47/34*
U.S. Cl. 414—134 **11 Claims**

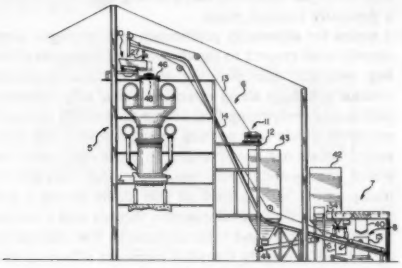


1. Apparatus for controlling a conveyor carrier driven by an endless chain to discharge a load at a selected one of a plurality of discharge stations comprising means to store data representing the distance from a reference point to said selected discharge station, said chain including a plurality of link-units of predetermined nominal length with a predetermined number of link-units defining a chain segment, means for counting chain link-units to provide a running total of the nominal length of chain between the moving carrier and said reference point, means including spaced sensors for measuring chain segments for determining errors between the nominal and actual length of the measured chain segments, means for substituting the actual length of each chain segment for the nominal length of associated chain segment while continuing to maintain a running total of the length of chain which total includes the nominal length of any fractional segment, and means to select and discharge a load from said conveyor carrier when said running total equals the distance between the reference point and said selected discharge station.

4,274,784
CUPOLA CHARGING

Philip J. Vacca, Blue Island, Ill., assignor to Whiting Corporation, Harvey, Ill.

Filed May 31, 1979, Ser. No. 44,092
Int. Cl.³ F27D *3/12*
U.S. Cl. 414—168 **6 Claims**



1. In combination with a cupola installation including a skiphoist and wherein the stack of the cupola has a top charging opening and a retractable feeder having a charge-receiving pan is mounted on one side of the stack for shifting over and discharging material into said top opening,

a skip operative on said skiphoist between a bottom charge-loading position and a top charge-discharging position and comprising,

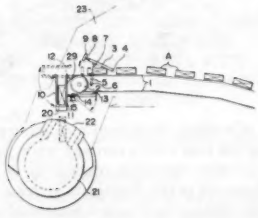
a carriage and two charging buckets mounted thereon, in said top position a first of said buckets being in load discharging position over said stack top opening and the second of said buckets being in load discharging position over said charge-receiving pan of said retractable feeder, and

actuating means operative for concurrently discharging the contents of said first and second buckets into said stack top openings and said charge-receiving pan, respectively.

4,274,785
METHOD AND APPARATUS FOR CHARGING ANODE SCRAPS TO A CONVERTER FURNACE

Kunio Ogawa, and Hiromitsu Iio, both of Niihama, Japan, assignors to Sumitomo Metal Mining Co. Ltd., Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,638
Claims priority, application Japan, Aug. 1, 1978, 53-93961
Int. Cl.³ F27B *5/12*
U.S. Cl. 414—173 **22 Claims**



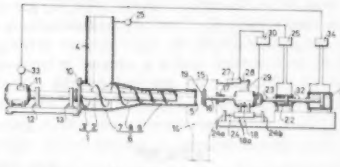
1. A method for charging a converter furnace with anode scraps conprising the steps of forming an anode scrap pile by piling anode scraps to a predetermined height, conveying said anode scrap pile toward structure defining a substantially U-shaped anode scrap receiving pocket having opposed side walls and a bottom, the distance between said opposed side walls being slightly greater than the height of the anode scrap pile, pushing said anode scrap pile toward the bottom of the pocket, the side walls of the structure being positioned horizontally so as to receive said anode scrap pile, rotating the pocket defining structure into which the anode scrap pile has been pushed so that the bottom is downward and the side walls are in the vertical direction, and charging the anode scrap pile in said pocket into the converter furnace by pushing the pile through a fixed chute bridging said structure and means defining a window in a hood of the converter furnace.

12. An apparatus for charging a converter furnace with anode scraps comprising means for forming an anode scrap pile by piling anode scraps to a predetermined height, means for conveying said anode scrap pile to structure defining a substantially U-shaped anode scrap receiving pocket having opposed side walls and a bottom, the distance between the side wall being slightly greater than the height of the anode scrap pile, means for pushing said anode scrap pile in toward the bottom of the pocket when the opening side between the said walls is directed in the horizontal direction and the side walls are positioned horizontally so as to receive said anode scrap pile, means for rotating the pocket defining structure into which said anode scrap pile has been pushed so that the bottom of the pocket is downward and the side walls are in the vertical direction, and means for charging the anode scrap pile in said pocket into a converter furnace by pushing said pile through a fixed chute bridging said structure and means defining a window in a hood for the converter furnace.

4,274,786
PROCESS AND APPARATUS FOR CONTINUOUSLY CONVEYING PARTICULATE COMPRESSIBLE FIBROUS MATERIAL FROM A ZONE AT A FIRST GAS PRESSURE TO A ZONE AT A SECOND GAS PRESSURE

Claes G. S. Svensson, Kode; Hans E. K. Eriksson, Örnsköldsvik, and Rolf B. Lundgren, Sundsvall, all of Sweden, assignors to Mo och Domsjo Aktiebolag, Örnsköldsvik, Sweden

Filed Feb. 7, 1979, Ser. No. 10,106
Claims priority, application Sweden, Feb. 10, 1978, 7801586
Int. Cl.³ D21C *7/06*
U.S. Cl. 414—218 **13 Claims**



1. A process for continuously conveying particulate compressible fibrous cellulose pulp material having a solids content between 30 and 90% and a density within the range from about 10 to about 150 kg/m³ from a first zone at a first gas pressure to a second zone at a second gas pressure with a pressure differential therebetween of at least 0.5 bar while retaining the prevailing gas pressure in each zone, which comprises:

(1) continuously compressing the particulate material in the first zone into a gas-containing but gas-impermeable resilient mass of low density extending across the interface between the two zones;

(2) continuously passing the mass of material out from the first zone into the second zone at a flow rate within the range from about 0.5 to about 8 kg of pulp per second while maintaining the gas pressure in the mass constant at the gas pressure of the first zone; and

(3) continuously breaking up the mass entering the second zone into particulate material;

substantially without impairing the quality of the pulp fibers.

5. An apparatus for continuously conveying particulate compressible fibrous cellulose pulp material having a solids content between 0 and 90% and a density within the range from about 10 to about 150 kg/m³ from a first zone at a first gas pressure to a second zone at a second gas pressure with a

pressure differential therebetween of at least 0.5 bar while retaining the prevailing gas pressure in each zone, and substantially without impairing the quality of the pulp fibers, which comprises:

(1) screw conveyor means for continuously compressing the particulate material in the first zone into a gas-containing but gas-impermeable resilient mass of low density extending across the interface between the two zones; and for continuously passing the mass of cellulose pulp material out from the first zone into the second zone while maintaining the gas pressure in the mass constant at the gas pressure of the first zone constant; the screw conveyor comprising a conveyor housing extending across an interface between the two zones; a conveyor passage through the housing having an inlet in the first zone and an outlet in the second zone; the passage having a portion of larger diameter adjacent the inlet and a portion of lower diameter adjacent the outlet, and a tapered portion connecting the inlet and outlet portions; a helical screw arranged for rotation in the passage and having an outer periphery extending through the passage portions spaced at a distance of from 2 to 5 mm from the housing wall with a correspondingly larger diameter in the inlet portion than the outlet portion for conveying cellulose pulp material along the passage from the inlet towards the outlet;

(2) means for continuously breaking up the mass entering the second zone into particulate material; comprising a rotatable restraining device movable between positions across and closing off the outlet and spaced from the outlet sufficiently to allow material conveyed by the screw to be discharged through the outlet; and having a substantially planar surface facing and contacting and arranged to seal against the mass of cellulose pulp material at the discharge opening and apply pressure to the mass sufficient to cause the mass to seal against both the walls of the conveyor passage and the planar surface of the restraining device while it is being discharged from the outlet; and

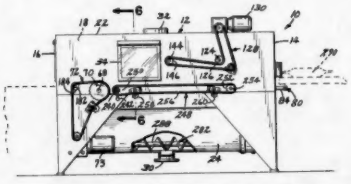
(3) disintegrating means operatively connected with the restraining device for rotation therewith for breaking up the mass of cellulose pulp material; whereby gas entrained in the mass is maintained therewithin substantially without loss and at substantially the same pressure as the gas pressure in the first zone until it is released in break-up of the mass of cellulose pulp material by the disintegrating means.

4,274,787

BAG OPENING AND EMPTYING APPARATUS

Edward E. Mueller, Tonka Bay, and Michael K. Harrod, Prior Lake, both of Minn., assignors to Whirl-Air-Flow Corporation, Minneapolis, Minn.

Filed Oct. 16, 1978, Ser. No. 951,755
Int. Cl.³ B65G *65/34*
U.S. Cl. 414—412 **5 Claims**



1. Apparatus for automatically opening and emptying bags comprising:

(a) a substantially enclosed housing having a bag inlet, a bag outlet, and a bag contents collection hopper;

(b) endless conveyor means in said housing for transporting bags in a generally horizontally disposed plane between said inlet and said outlet, said conveyor means further comprising:

(i) a pair of conveyor carriages spaced apart in said generally horizontal plane;

(ii) an endless conveyor member mounted to each of said carriages;

(iii) a plurality of piercing members attached to each of said conveyor members, said piercing members defining a generally vertical plane;

(iv) means for adjustably positioning said carriages transversely with respect to the direction of transport of the bag whereby said piercing members may puncture various size bags along opposite lateral edges thereof, said means comprising first and second shafts rotatably mounted within said housing having substantially horizontal rotational axes parallel to each other and disposed transversely with respect to the direction of transport of the bag, each of said shafts having a first portion with right hand external threads and a second portion with left hand external threads; first and second right hand internally threaded members affixed to said first conveyor carriage in which are threadedly received said first portions of first and second shafts; first and second left hand internally threaded members affixed to said second conveyor carriage and in which are threadedly received said second portion of first and seshafts; and means for rotating said first and second shafts;

(c) a cutting disc mounted for rotation about a substantially horizontal axis and disposed in a substantially horizontal axis and disposed in a substantially vertical plane in the path of the bags to cut through opposite sides of the bags along a cut line between the opposite lateral edges of the bags; and

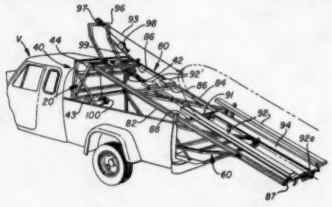
(d) means for rotatably driving said cutting disc.

4,274,788

VEHICLE MOUNTED CARRIAGE AND ELEVATING APPARATUS

Luther M. Sutton, P.O. Box 972, Pineville, La. 71360

Filed Jan. 17, 1980, Ser. No. 112,835
Int. Cl.³ B60R *9/00*; B60P *3/10*; B60N *9/00*
U.S. Cl. 414—462 **5 Claims**

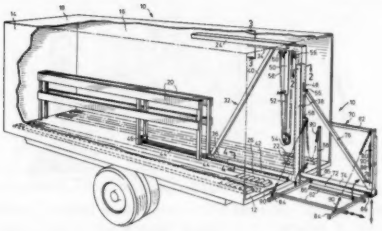


1. A method of loading a boat onto a vehicle comprising the steps of: moving the boat onto a carriage while the carriage is in an inclined position extending rearwardly of the vehicle; elevating the front end of the carriage to increase the angle of inclination of the carriage relative to a horizontal plane, which includes rotating a link, having a lower end pivotally secured to the vehicle and an upper end movably secured to the carriage, from a horizontal position to a vertical position; and elevating the rear end of the carriage to position the carriage and the boat secured thereto above the vehicle, which includes rotating a post, having a lower end pivotally secured to a vehicle and an upper end movably secured to the carriage, from a horizontal position to a vertical position; and holding the link in the vertical position while moving the carriage in a horizontal direction relative to the upper end of the link.

4,274,789
MECHANISM FOR LOADING AND UNLOADING PALLETS FROM VANS

John C. Martin, Toronto, and William C. McKee, Willowdale, both of Canada, assignors to Diesel Equipment Limited, Toronto, Canada

Filed Apr. 6, 1979, Ser. No. 27,864
Int. Cl.[3] B60P *3/00*
U.S. Cl. 414—501 13 Claims



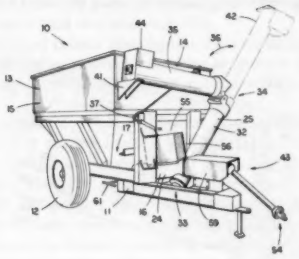
1. A pallet loader comprising:
(a) guide means defining a longitudinally elongated guide path extending in a first generally horizontal plane,
(b) slide means comprising a vertically oriented guide post and means slidably supporting said post on said guide means for laterally restrained longitudinal movement along said guide path between a first position in which a said post is disposed at an elevating station, and a second position spaced longitudinally from said first position, said post being adapted to provide a vertically oriented slipway,
(c) elevator means mounted on said post so as to be disposed in said elevator station when said slide means is located in said first position, said elevator means comprising an elevator post slidably mounted in said slipway for laterally restrained vertical movement relative to said guide post when in said elevator station between an elevated position and a lowered position, and load engaging means mounted on said elevator post and arranged to releasably engage a palletized load to permit raising and lowering of the pallet load,
(d) drive means including means for raising and lowering said elevator post to raise and lower a palletized load and means for driving said slide member between said first and second positions so as to move a palletized load into and out of said elevator station.

4,274,790
GRANULAR MATERIAL UNLOADING VEHICLE WITH PRESSURE-RELIEF BOX

Walter D. Barker, R.R. 1, St. Paul, Ind. 47272

Filed Feb. 23, 1979, Ser. No. 14,699
Int. Cl.[3] B60P *1/00*
U.S. Cl. 414—502 8 Claims

1. A granular material unloading vehicle, comprising:
(a) a wheeled chassis;
(b) a material bin mounted thereto;
(c) a first substantially horizontal screw conveying means for moving the material from said bin through a discharge opening therein;
(d) a second substantially vertical screw conveying means in mating relation with said first means outside said bin for further moving the material therethrough;
(e) a power transmission means for driving said first means in operative association with said second means; and
(f) a means for assisting with material conveyance from said bin by relieving pressure in the mating end of said first means during the start of material transfer therethrough, said pressure-relief means includes an elongated inverted box mounted atop said first means outside said bin and adjacent the mating junction with said second means, said

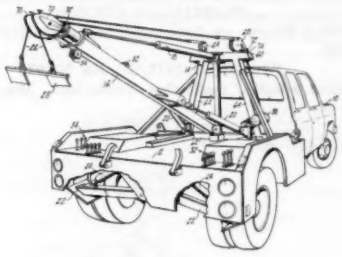


box enclosing an expansion chamber therein in material communication with said first means.

4,274,791
TOWING AND HOISTING APPARATUS

Gary D. Moon, 239 Vista Del Mar, Cannon Beach, Oreg. 97110

Filed Dec. 20, 1978, Ser. No. 971,369
Int. Cl.[3] B60P *3/00*
U.S. Cl. 414—563 10 Claims



1. Vehicle towing and hoisting apparatus of the type adapted for mounting on the afterbody of a truck, comprising:
an upright frame having a vertical center post affixed thereto; and
an extendable towing boom which is hingeably pinned and rotatably hung at the base of the center post and which is formed of
a base tube having a top roller and a bottom roller outwardly of the top roller,
a hydraulic actuator within the base tube, and
an outreach arm which is guideable by the top and bottom rollers to a retracted position around the actuating cylinder.

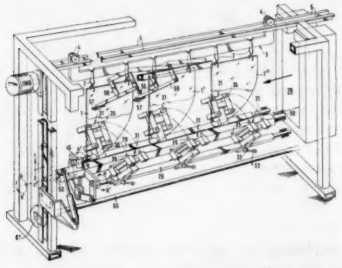
4,274,792
APPARATUS FOR THE AUTOMATIC UNFASTENING OF GLASS SHEETS SUSPENDED FROM PINCER-LIKE GRIPPING MACHINES

Mario Roth, Aachen; Werner Pagel, Herzogenrath; Heinz-Bernd Rissmann, and Karl-Christoph Happich, both of Aachen, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed May 23, 1979, Ser. No. 41,898
Claims priority, application France, Jul. 6, 1978, 78 17026
Int. Cl.[3] B65G *67/04*
U.S. Cl. 414—564 18 Claims

1. In an apparatus for automatically unfastening sheets of glass which are suspended vertically under the influence of

gravity from pincer-like gripping means and where the weight of the sheet causes the gripping means to automatically grip the sheet with the apparatus including a lifting element for engaging and lifting a sheet to move the sheet to a transportation means and including a release means for releasing the pincer-like gripper means for engagement with a sheet; the improvement comprising in that said lifting means has at least one gripper element movable in a horizontal direction toward a surface of a sheet to grip the same.



4,274,793

WORKING PLATFORM

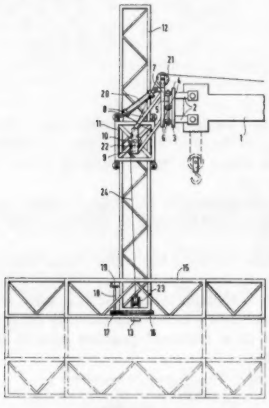
Paul Frey-Wigger, am Zeigerwald, Schötz, Switzerland (CH-6247)

Filed May 5, 1977, Ser. No. 793,970

Claims priority, application Switzerland, May 5, 1976, 5611/76

Int. Cl.³ B66F 9/06

U.S. Cl. 414—607 **5 Claims**



1. A working platform for attachment to a crane, comprising a substantially horizontal pivot bearing; means for detachably securing said pivot bearing to the end portion of the boom of a crane, including a plate, a plurality of lugs extending from said plate and having coaxial bores for reception of pins therein and braces securing said plate to said pivot bearing; a second bearing mounted in said pivot bearing; an elongated column reciprocably mounted in said second bearing; a gallery; means for movably mounting said gallery on said column; and means for securing a crane cable to said column so that, when in use, the cable moves said column with respect to said second bearing.

4,274,794

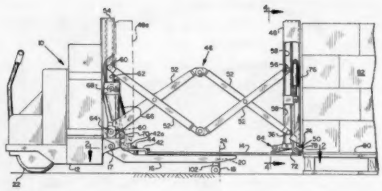
LIFT TRUCK HAVING ROTATABLE PLATEN FOR HANDLING UNPALLETIZED LOADS AND METHOD FOR USING SAME

John E. Olson, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Filed Oct. 29, 1979, Ser. No. 88,751

Int. Cl.³ B66F 9/14

U.S. Cl. 414—663 **23 Claims**



1. A mobile lift truck for handling unpalletized loads comprising:

(a) a load-carrying platform;

(b) pivotal means rotatably mounting said load-carrying platform upon said lift truck for permitting rotation of said platform with respect to said lift truck about a generally vertical axis of rotation between first and second rotatable positions substantially 90° apart from each other;

(c) a push frame mounted on said lift truck so as to face in a predetermined direction with respect to said lift truck for pushing a load off of said load-carrying platform in said predetermined direction;

(d) retraction means for retracting said push frame off of said load-carrying platform so as to permit rotation of said platform between said first and second rotatable positions without interference with said push frame;

(e) mounting means attaching said push frame to said lift truck for retaining said push frame in said predetermined direction during rotation of said platform between said first and second rotatable positions so as to enable said push frame to push loads off of said platform in said predetermined direction with respect to said lift truck in both of said respective rotatable positions of said platform; and

(f) means connected to said load-carrying platform and responsive to the position of said push frame for preventing rotation of said platform unless said push frame is retracted off of said platform.

4,274,795

LOAD CARRYING VEHICLES

Robert A. Taylor, Aylesbury, England, assignor to Lancer Boss Limited, England

Filed Aug. 9, 1978, Ser. No. 932,145

Claims priority, application United Kingdom, Apr. 5, 1978, 13332/78

Int. Cl.³ B66C 23/80

U.S. Cl. 414—673 **4 Claims**

1. A load-carrying vehicle for raising and lowering loads, with an overturning moment about the axis of the vehicle front road wheels caused by supporting of a load, said load-carrying vehicle comprising

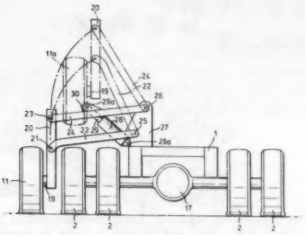
a chassis mounted on conventional road wheels,

load carrying means including

load raising and lowering means supported by said chassis, at least one additional road wheel,

parallel-like linkage means interconnecting said at least one additional road wheel and said chassis to articulate said at least one additional road wheel for movement with respect to said chassis, wherein in an inoperative position said at least one additional road wheel is supported by said parallel-like linking means above the front load wheels

within the transverse outside spacing of the front road wheels, and in an operative load-bearing position said at least one additional road wheel is disposed in engagement with the ground beside the front road wheels of the vehicle, and



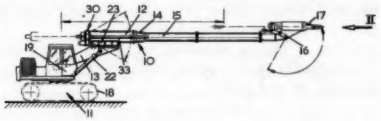
power operated means connected between said chassis and said parallel-like linkage means and operable in response to an overturning moment about the vehicle front road wheels when a load is supported by said load carrying means to move said at least one additional road wheel between said inoperative and operative positions.

4,274,796

MACHINE COMPRISING A ROTATABLE BOOM ASSEMBLY

Raymond J. Phillips, Matlock, England, assignor to Alexander Shand Services Limited, Matlock, England

Filed Apr. 4, 1979, Ser. No. 26,961
Int. Cl.[3] E02F *5/00*
U.S. Cl. 414—690 **12 Claims**



1. A machine comprising a rotatable telescopic boom assembly including an outer boom section, an intermediate boom section rotatably mounted within the outer boom section, and an inner boom section adapted to carry an implement at one end thereof, which inner boom section is located within the intermediate boom section in a telescopic relationship thereto and which is coupled to the intermediate boom section so as to rotate therewith within the outer boom section; a mounting to which the outer boom section is rigidly attached; and fluid pressure actuating means for rotatably driving the intermediate boom section within the outer boom section continuously through 360° in one direction of rotation and for reciprocating the inner boom section within the outer boom section.

4,274,797

BACKHOE EXCAVATING APPARATUS

David B. Coon, 8262 Michael Dr., Huntington Beach, Calif. 92647

Filed Jun. 25, 1979, Ser. No. 51,716
Int. Cl.[3] E02F *3/75*
U.S. Cl. 414—694 **3 Claims**

1. In backhoe excavating apparatus for mounting on the rear of a tractor and including a main arm fulcrumed at one end to a tractor-mount in pivotal relationship therewith, a dipper stick arm pivotally supported at one end by a horizontal pivot at the free end of said main arm and formed of elongated telescoping members which are extendable and retractable by actuator means enclosed therein, a digging bucket pivotally mounted to swing at the free end of the dipper stick arm, and actuator means carried by the main arm and by the dipper stick arm for articulating said latter arm and said bucket, an improved dipper stick arm comprising:

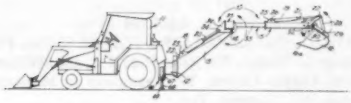
(a) a hydraulic rotator assembly forming the supported end of the dipper stick arm and including

(i) a cylindrical rotator housing bearing a radial inwardly-projecting dam member extending in an axial direction along one portion of the inner annular surface thereof, and

(ii) a cylindrical rotator element co-axially enclosed within said rotator housing and bearing a radial outwardly-projecting wing member extending in an axial direction along one portion of the outer annular surface thereof, said rotator element being mechanically connected through a portion thereof extending without said housing to the dipper stick arm to rotatably support said arm, and said wing member cooperating with the inner annular surface of said housing and said dam member cooperating with the outer annular surface of said rotator element to form two fluid tight compartments between said housing and said rotator element which are mutually expandable and contractable in response to rotational positioning of said rotator element within said housing;

(b) pivot means affixed to the housing of said rotator assembly for pivotally connecting said assembly and connected rotatably-supported dipper stick arm to the free end of the main arm of the backhoe excavating apparatus;

(c) actuator means for extending and retracting the telescoping members forming the dipper stick arm including



(i) a hydraulic cylinder enclosed within said arm and having its closed hydraulic fluid receiving end extending through the cylindrical rotator element of the hydraulic rotator assembly,

(ii) a piston driver actuator rod having its piston end extending into said hydraulic cylinder for positioning therein in response to hydraulic fluid introduced to or withdrawn from said cylinder and having its actuator end extending from said cylinder and through said arm for attachment thereto at its free end, and

(iii) means associated with the closed end of said cylinder for the introduction of hydraulic fluid thereto and the withdrawal of hydraulic fluid therefrom for moving and positioning the piston driven actuator rod thereby extending or retracting said dipper stick arm; and

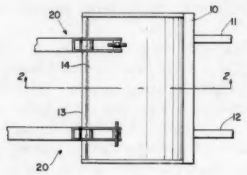
(d) means for introducing hydraulic fluid to one compartment of said rotator assembly while withdrawing hydraulic fluid from the other compartment of said assembly to mutually expand and contract said compartments whereby said wing member of said rotator element may be rotatably actuated and maintained with respect to said dam member for turing said dipper stick (and the digging bucket pivotally mounted thereon) to and positioning same in directions clockwise and counterclockwise from their normal vertical orientation for effecting trenching and excavating operations in which sloping trench walls and inclined excavated surfaces are developed by said backhoe excavating apparatus.

4,274,798

LOADER FORK

William H. Guest, 215 - Rte. 10, Dover, N.J. 07801

Filed May 23, 1979, Ser. No. 41,816
Int. Cl.[3] B66F 9/12
U.S. Cl. 414—724 11 Claims



1. A loader fork for attachment to a bucket of a front end loader, the bucket having a bottom plate with a cutting edge and a thick lip portion rearwardly thereof, the loader fork comprising:

a tine, a riser secured to the tine, the arm above the tine extending rearwardly from the riser to provide a slot,

said riser being a rearwardly facing channel, and

means for distributing loads acting against said riser into said bucket bottom plate comprising:

bearing bar means extending transversely of said arm rearwardly of said riser, and positioned to engage the upper surface of the thick lip portion of the bucket, and

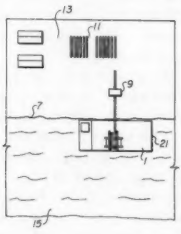
clamp means for clamping said tine against the bottom surface of said bottom plate comprising a screw carried by said arm and located rearwardly of said bearing bar means.

4,274,799

METHOD AND APPARATUS FOR REELING PIPELINE

Benjamin C. Tisdale, III, River Ride, La., and William B. Nicholson, Corpus Christi, Tex., assignors to Martech International, Inc., Houston, Tex.

Filed Feb. 16, 1978, Ser. No. 878,302
Int. Cl.[3] F16L 1/04
U.S. Cl. 414—747 7 Claims



1. In combination with a vessel having a reel supported thereon for laying pipeline unwinding from the reel onto the floor of a body of water as the vessel passes thereover, the axle of the reel being disposed normal to the longitudinal axle of the vessel when in the pipelaying position, the improvement including means for pivotally moving the reel about an axis extending vertically through the axle so that the reel axle is in a loading position which is different from the pipelaying position, when pipeline is being loaded onto the reel,

said means for pivotally moving the reel including a central axis about which pivotal movement takes place, and

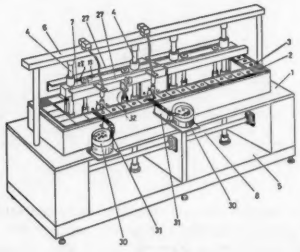
means for moving the central axis laterally of the vessel axis so as to translate the reel away from the side of the vessel prior to pivotal movement thereof.

4,274,800

GENERAL PURPOSE ASSEMBLY MACHINE

Masayuki Tsuruha, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma City, Japan

Filed Dec. 21, 1978, Ser. No. 972,060
Claims priority, application Japan, Dec. 28, 1977, 52/159030; Dec. 28, 1977, 52/159031
Int. Cl.[3] B65G 47/90
U.S. Cl. 414—750 7 Claims



1. A general purpose assembly machine comprising a pallet guide formed in a closed planar loop having at least two spaced longitudinally directed straight parallel portions for indexing said plurality of pallets;

a pair of vertical columns situated within said closed loop of said pallet guide;

an elevator block slidably mounted for vertical movement to said pair of vertical columns;

two parallel longitudinally elongated tool plates attached to said elevator block on opposite sides thereof reciprocable with predetermined strokes with respect to said elevator block in a plane parallel to the plane of said closed loop;

means for reciprocally moving said elevator block and said two tool plates together vertically in synchronous relation to said predetermined strokes; and

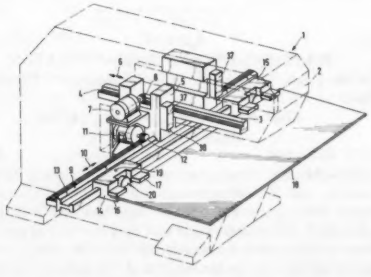
a plurality of means, mounted to said two tool plates at longitudinally spaced apart locations, for handling parts disposed on said pallets.

4,274,801

MACHINE TOOL WITH AN ADJUSTABLE MECHANISM FOR FIXING AND DISPLACING A WORKPIECE RELATIVE TO A TOOL

Eugen Herb, Ditzingen, and Berthold Leibinger, Gerlingen, both of Fed. Rep. of Germany, assignors to Trumpf Maschinen AG, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,516
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805532
Int. Cl.[3] B23D 27/00
U.S. Cl. 414—751 12 Claims



1. A machine tool construction, comprising, a support frame

having a bar portion, a carrier guide mounted on said bar portion for movement backwardly and forwardly therealong, a work carrier mounted on said carrier guide for backward and forward movement at right angles to said bar portion, at least one workpiece holder having means thereon for clamping a workpiece thereto and being mounted on said work carrier for movement backwardly and forwardly along said work carrier, a locking device overlying said work carrier and the path of movement of said workpiece holder including a locking element movable toward and away from said workpiece holder, said workpice holder having a top with a locking recess into which said locking element is enageable when said workpiece holder is precisely positioned with respect to said locking device.

4,274,802

AUTOMATED DEVICE

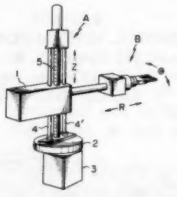
Hajimu Inaba, Hino, and Shigemi Inagaki, Musashino, both of Japan, assignors to Fujitsu Fanuc Limited, Hino, Japan

Filed Jan. 23, 1979, Ser. No. 5,773

Claims priority, application Japan, Jan. 31, 1978, 53/9661[U]

Int. Cl.³ B25J *9/00, 13/00, 17/00*

U.S. Cl. 414—783 **7 Claims**



1. An automated device comprising: an arm; a supporting case mounted on the end of said arm; a rotary actuator mounted on the end of said supporting case; a wrist rotatably held by said rotary actuator; a hand fixed to said wrist; a replaceable stopper means operatively coupled to said rotary actuator and disposed within said supporting case, wherein said stopper means rotates with said rotary actuator and said static means are positioned for contacting said stopper means at predetermined positions during the rotation thereof thereby preventing further rotation thereof; and a cushion means positioned within said supporting case for contacting said stopper means prior to the contact of said stopper means and said static means, wherein said cushion means thereby slows down the velocity of rotation of said rotary actuator and said static means stops the rotation of said rotary actuator at said predetermined positions independent of the rotational force applied thereto, and wherein said stopper means has four surfaces, one of said surfaces abutting against one side of said cushion means when a second one of said surfaces abuts against one of said static means, a third one of said surfaces abutting against the other side of said cushion means when a fourth one of said surfaces abuts against the other of said static means; whereby said rotary actuator can stop rotating at two predetermined positions.

4,274,803

HIGH-PRESSURE CENTRIFUGAL PUMP UNIT

Hans Spengler, and Klaus Stoof, both of Halle, German Democratic Rep., assignors to VEB Kombinat Pumpen und Verdichter, Halle, German Democratic Rep.

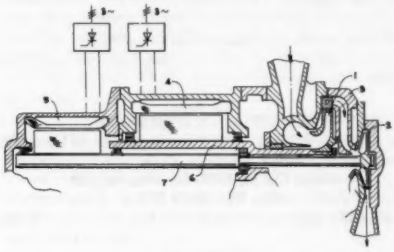
Filed May 8, 1979, Ser. No. 37,022

Claims priority, application German Democratic Rep., May 29, 1978, 205616

Int. Cl.³ F04D *17/08*

U.S. Cl. 415—70 **10 Claims**

1. A high-speed centrifugal pump, comprising a housing; a low-speed suction stage arranged in said housing and having an axis; at least one high-speed high-pressure stage also arranged in said housing and axially spaced from said low-speed suction stage, so that said housing has a suction side and a pressure side; and drive means operative for driving said stages independently of each other and including a first prime mover operative for driving said low-speed suction stage and a second



prime mover operative for driving said high-speed high-pressure stage, one of said prime movers which is operative for driving a respective one of said stages being flanged to said housing at a respective one of said sides, the other of said prime movers being flanged to said one prime mover in tandem arrangement.

4,274,804

AXIAL-FLOW TURBINE

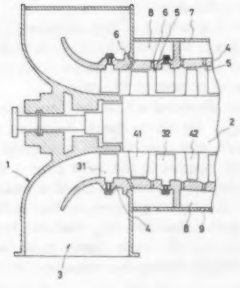
Kiyomi Teshima; Toshio Tsuboi, and Yukimasa Kajitani, all of Tamano, Japan, assignors to Mitsui Engineering and Shipbuilding Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 918,463, Jun. 23, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,595

Claims priority, application Japan, Jul. 15, 1977, 52-85314

Int. Cl.³ F01D *25/32*

U.S. Cl. 415—121 A **12 Claims**



1. An improved axial-flow turbine operable with a working fluid containing dust and moisture, comprising a turbine casing, a turbine shaft rotatably supported in a central portion thereof, stator blade means mounted within the turbine casing, and rotor blade means mounted about the outer periphery of the turbine shaft, said stator and rotor blade means being alternately disposed in the direction of the turbine shaft, in mutually opposing arrangement with respect to the angle of their disposition relative to the turbine shaft and having a turbine blade shape in cross-section, characterized in that an exit angle of a first-stage stator blade means with respect to the flow of the working fluid is less than 60° which is smaller than an exit angle of a second-stage stator blade means, and the height of the first-stage stator blade means is 0.8–1.0 times as large as the height of the second stage stator blade means, wherein the absolute exit velocity of the working fluid from the first-stage

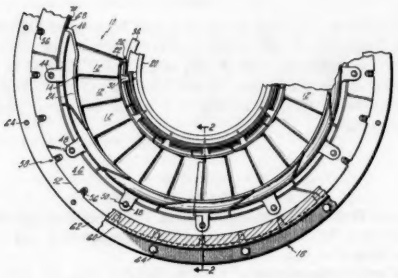
stator blade means is below 200 m/s which is smaller than the absolute exit velocity of the second-stage stator blade means, whereby the absolute exit velocity of the working fluid from each stator and rotor blade means includes a directionally same velocity component with respect to the turbine shaft axis, and the flow of the working fluid has the same directional vortical flow with the turbine shaft as the axis of the vortex.

4,274,805

FLOATING VANE SUPPORT

Trent H. Holmes, Rocky Hill, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1978, Ser. No. 948,289
Int. Cl.³ F01D *25/24*
U.S. Cl. 415—138 **5 Claims**



1. A rotary machine having an axially extending flow path with an upstream end and a downstream end, which comprises:

an outer case having a central axis and a plurality of pins at the interior thereof wherein the pins are oriented in an essentially axial direction;

a continuous ring having splines extending outwardly therefrom to engage the pins wherein said pins and splines are adapted to accommodate relative differential growth of the ring with respect to the case;

a vane cluster disposed across the flow path and having an outer flange, the outer flange engaging the continuous ring wherein said vane cluster is adapted to adjust rearwardly with respect to the outer case; and

an axial support structure, which is adjoined to the outer case at a point downstream of the radial engagement between the continuous ring and the outer case, positioned to engage the vane cluster as the vane cluster adjusts rearwardly during operation.

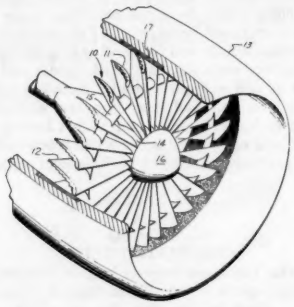
4,274,806

STAIRCASE BLADE TIP

Vicente C. Gallardo, Jr., Hamilton, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jun. 18, 1979, Ser. No. 49,780
Int. Cl.³ F01D *5/20*
U.S. Cl. 415—172 A **18 Claims**

1. An airfoil for rotation within a casing wall, including pressure and suction sides and a blade tip having a transverse planar surface defining an edge on the pressure side of said airfoil for rubbing against and effecting a seal with said casing wall, said edge comprising a plurality of discrete edge segments at least one of which extends substantially parallel to the airfoil axis of rotation, whereby upon rotation of said airfoil and rubbing of said edge thereof against said casing wall, a



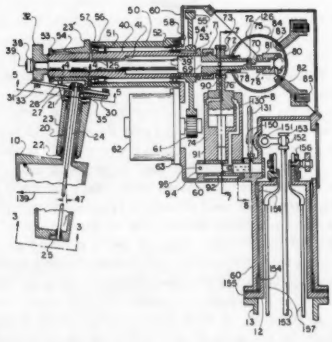
resultant force is exerted on said airfoil in a direction substantially normal to said airfoil axis of rotation.

4,274,807

SPEED CONTROL SYSTEM FOR A WINDMILL

Clarence E. Kenney, 119 Stuart Rd., Racine, Wis. 53406

Filed Jul. 31, 1978, Ser. No. 929,265
Int. Cl.³ F03D *7/04*
U.S. Cl. 416—48 **5 Claims**



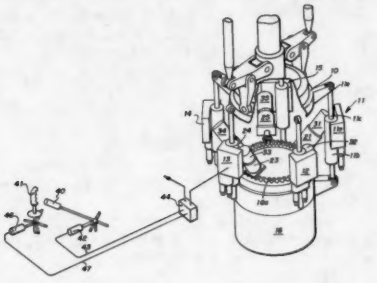
1. A windmill control system comprising a plurality of rotatably mounted windmill blades having a common axis of rotation, said blades being pivotal about the respective longitudinal axis of each of said blades to alter the pitch of said blades, a rotatably mounted hollow shaft disposed on the rotational axis of said blades and being rotatable with said blades, a piston assembly movably disposed within said hollow shaft and movable in response to fluid pressure in said shaft for decreasing the pitch of said blades, a fluid pressure generating mechanism in driven relation with said shaft and generating fluid pressure on said piston assembly in response to the rotation of said blades, a fluid pressure governor operatively connected with said generating mechanism for decreasing the fluid pressure on said piston assembly according to the speed of rotation of said blades, control mechanism interconnected between said piston assembly and said blades for adjusting the pitch of said blades in response to the movement of said piston assembly, and an elastic member disposed within each of said blades and connected thereto and being operatively connected with said control mechanism and being disposed and operative to transmit the centrifugal force of said blades to said shaft and to counter the force of fluid pressure on said piston assembly and

thereby increase the pitch of said blades when fluid pressure on said piston assembly is decreased.

4,274,808
SWASHPLATE DRIVE REDUNDANCY SYSTEM

Jimmy G. Garner, Hurst, and Kenneth F. Guinn, Fort Worth, both of Tex., assignors to Textron, Inc., Providence, R.I.

Filed Dec. 21, 1978, Ser. No. 971,712
Int. Cl.³ B64C *27/74*
U.S. Cl. 416—114 **10 Claims**



1. In a helicopter having a mast which drives a rotor and which is driven by a transmission and having a swashplate individually linked to pitch horns on each rotor blade, the improvement which comprises:

(a) at least four control channels coupled to said swashplate, three of which normally control the attitude and position of said swashplate;

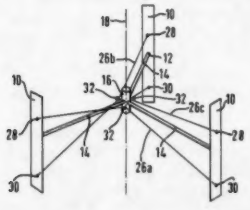
(b) a separate unit to power each said control channel, each power unit being directly driven by said transmission and independent of every other power unit; and

(c) means to apply control of said swashplate from among said control channels.

4,274,809
VERTICAL AXIS WIND TURBINES

Patricio E. Delgado, and Barry A. Holmes, both of Alresford, England, assignors to P.I. Specialist Engineers Limited, London, England

Filed Oct. 11, 1979, Ser. No. 83,629
Claims priority, application United Kingdom, Oct. 11, 1978, 40088/78
Int. Cl.³ F03D *3/06, 7/06*
U.S. Cl. 416—117 **11 Claims**



1. A vertical axis wind turbine, comprising:

a plurality of blade means;

support means for mounting the plurality of blade means thereto, said support means enabling the blade means to rotate around a vertical axis, subjecting said blade means to a centrifugal force, the blade means being hinged to the support means at a hinge position thereby permitting an angle of inclination of the blade means relative to a vertical axis passing through said support means to vary;

a plurality of tie wire means for intercoupling each of said plurality of blade means together via said support means, thereby reducing the bending stresses in said support means when said support means and said blade means rotate about said vertical axis, each of said plurality of tie wire means being connected at one end to one of said plurality of blade means at a position above said hinge position, and being connected at the other end to an adjacent one of said plurality of blade means at a position below said hinge position;

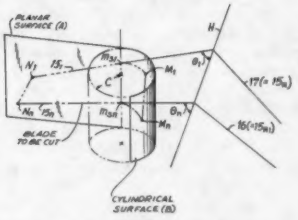
a plurality of member means connected to each of said plurality of tie wire means at an intermediate point between the two ends thereof for supporting each of said tie wire means, said member means tending to move in a direction corresponding to the movement of said blade means as said blade means and said support means rotate about said vertical axis; and

a plurality of inwardly-directed force control means connected to each of said plurality of member means and mounted on said support means for subjecting each of said member means to an inwardly-directed force.

4,274,810
DIAGONAL-FLOW FAN WHEEL WITH BLADES OF DEVELOPABLE SURFACE SHAPE

Yoshiyasu Nishikawa, Ono, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jun. 23, 1978, Ser. No. 918,556
Claims priority, application Japan, Jun. 29, 1977, 52-78168; Jul. 1, 1977, 52-79309
Int. Cl.³ F04D *29/28*
U.S. Cl. 416—186 R **8 Claims**

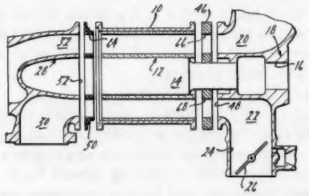


1. A fan wheel of a diagonal-flow fan for propelling a flow of a gas, said fan wheel comprising a rotational shaft, frustoconical main plate coaxially fixed to the shaft, a frustoconical side plate coaxially fixed with respect to the axis of rotation of the shaft and spaced apart from the main plate to form therebetween a diagonal flow path for the gas, the cone angle of the main plate being greater than the cone angle of the side plate, and a plurality of fan blades each fixed at respective opposite side edges to the inner surfaces of the main and side plates and having an inner entrance part and an outer exit part, said parts extending substantially transverse to said diagonal flow path, each of said fan blades comprising a plate of a surface shape conforming to a portion of a combination of developable surfaces joined to each other along a straight joining line in an algebraically continuous manner, said portion being formed of elements constituted by mutual intersection lines between said developable surfaces and successive coaxial conical surfaces varying between said conical surfaces of said main and side plates, said coaxial conical surfaces progressively diminishing in cone angle from said main plate to said side plate and having a common axis coinciding with said axis of rotation of the shaft, said straight joining line and said common axis lying in a common plane and forming an angle therebetween.

4,274,811
WAVE COMPRESSOR TURBOCHARGER

V. Durga Nageswar Rao, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 23, 1979, Ser. No. 32,324
Int. Cl.³ F04F *11/00*
U.S. Cl. 417—64 **8 Claims**

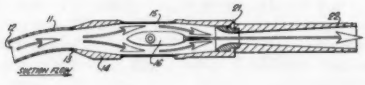


1. A turbo compressor for use with an air-fuel mixture intake manifold for an engine comprising a circular rotor mounted for rotation about its geometric axis, said rotor comprising a hub and axially disposed cells formed about the periphery of the hub, a cylindrical shroud surrounding said rotor and disposed with a close tolerance clearance between the interior surface of said shroud and the outer dimension of said rotor, an exhaust gas manifold and an air intake manifold for said engine, said exhaust gas manifold having formed therein a low pressure exhaust gas passage and a high-pressure, hot exhaust gas passage, said intake manifold having a low pressure intake air passage and a high pressure air outlet passage communicating with the air intake side of the engine, a first stator plate situated between said rotor and said air intake manifold and a second stator plate situated between said exhaust gas manifold and said rotor, said first stator plate having formed therein a low pressure air inlet port and a high pressure air outlet port, said second stator plate having formed therein a low pressure exhaust gas outlet port and a high pressure exhaust gas inlet port communicating respectively with said low pressure exhaust gas passage and said high pressure exhaust gas passage, the ports in said first stator plate communicating respectively with said low pressure intake air passage and said high pressure air-outlet passage, said rotor being formed of a material that has a low coefficient of thermal expansion relative to the coefficient of thermal expansion of the material of which the shroud is formed, thereby providing minimum change in clearance between said rotor and said shroud during operation of said compressor as temperature gradients are developed during an energy exchange that exists between the hot high pressure exhaust gases and the relatively cool low pressure inlet air.

4,274,812
JET PUMP

John H. K. Elvidge, and Charles J. Watkinson, both of 1 Brown Pl., Brown Lane Industrial Estate, Leeds 11, Yorkshire, England

Filed Dec. 1, 1978, Ser. No. 965,582
Int. Cl.³ F04F *5/46*
U.S. Cl. 417—179 **3 Claims**

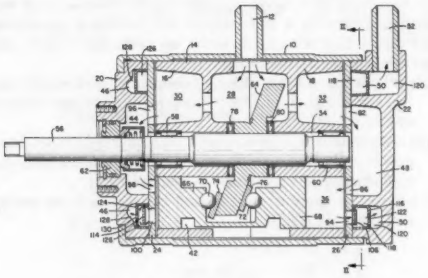


1. A jet pump comprising a cylindrical open-ended hollow chamber having a suction inlet at one end and a discharge tube at the opposite end; a streamlined body mounted in the chamber, with one end facing the suction inlet and the opposite end facing the discharge tube; a nozzle head situated at that end of the body which facs the discharge tube and with its discharge directed along said tube; a duct extending into the body through the wall of the chamber and communicating with the nozzle head; means to couple a primary flow of high-pressure fluid to the inlet of the duct; and means to couple a suction tube to the suction inlet of the chamber; the arrangement being such that, in use, the high-pressure primary fluid flow issuing from the nozzle and along the discharge tube will entrain material into and along the suction tube, over the streamlined surface of said body, and out along the discharge tube, in which the nozzle head incorporates multiple nozzles arranged in a ring around a central nozzle, and the nozzles are so angled in the head that the initially separate streams of high-pressure fluid which they discharge all converge downstream of the nozzle head, and in which channels are formed in the nozzle head between each nozzle and the circumferentially succeeding one, along which channels fluid can be entrained into the streams issuing, in use, from the nozzles.

4,274,813
SWASH PLATE TYPE COMPRESSOR

Atsuo Kishi, and Toshio Sudo, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1978, Ser. No. 950,573
Claims priority, application Japan, Oct. 12, 1977, 52/121479
Int. Cl.³ F04B *1/12, 39/00*
U.S. Cl. 417—269 **16 Claims**



1. A swash plate type compressor comprising a cylindrical compressor housing having an inlet of coolant gas, a cylinder block assembly supported within said compressor housing and having a crank chamber communicated with the inlet at an axially central portion thereof, a drive shaft rotatably supported at its ends in said cylinder block assembly, said cylinder block assembly having a plurality of cylinder bores spaced radially outwardly from said drive shaft, front and rear side covers disposed at opposite ends of said cylinder block assembly, said side covers having a low pressure chamber at a radially central portion and a high pressure chamber spaced radially outwardly from the low pressure chamber, seal means disposed at one end of said drive shaft, front and rear valve plates interposed between said cylinder block assembly and respective ones of said side covers and having a first hole communicating the crank chamber with the low pressure chamber, second holes communicating the low pressure chamber with the cylinder bores and third holes communicating the cylinder bores with the high pressure chamber, a swash plate disposed in the crank chamber and keyed on said drive shaft so as to rotate therewith, and a plurality of pistons slidably arranged within the cylinder bores respectively, a rotating motion of said swash plate being converted to a reciprocating motion of said pistons, characterized in that the high pressure chamber is divided into a plurality of small rooms communicated in series, that the third holes communicate the cylinder bores with one end small room of the high pressure chamber, that the other end small room of the high pressure chamber in one of said side covers is communicated with an outlet of the

compressed gas on the one of said side covers, and that the other end small room of the high pressure chamber in the other of said side covers is communicated with the high pressure chamber in the one of said side covers, and wherein said high pressure chamber is divided into said plurality of small rooms by a partition plate member having a U-shaped cross section, said partition plate member being inserted in the high pressure chamber so as to cover the third holes of said valve plates.

4,274,814

ROTATIVE MACHINE FOR FLUIDS

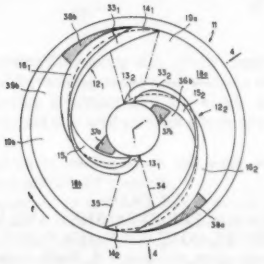
Eugeniusz M. Rylewski, 43bis, Ave. du Gal Leclerc, 78470 St. Remy les Chevreuse, France

Continuation of Ser. No. 797,311, May 16, 1977, abandoned. This application Apr. 24, 1979, Ser. No. 33,015

Claims priority, application France, May 17, 1976, 76 14837

Int. Cl.[3] **F01C** *1/00;* **F03C** *2/00;* **F04C** *2/00, 18/00*

U.S. Cl. 418—15 **11 Claims**



1. In a positive-displacement machine in which the conversion of pressure energy of fluids is obtained by the circulation of at least two spaced vane members in at least one spiral-like passage of revolution defined by a pair of rib members having top surfaces and side walls and a bottom wall therebetween, wherein

said vane members are parts of at least two vane wheels,

each of said vane wheels is mounted for rotation about its own axis and housed in a slot formed in a first part of said machine,

said vane members circulating in said spiral-like passages of revolution formed in a second part of said machine,

at least one of said first and second parts of said machine is rotatable, the axis of rotation thereof constituting the main axis of rotation of said machine,

said spiral-like passages of revolution are generated by a combined rotation of said vane members about the axis of rotation of their respective vane wheels and by rotation of said first part of said machine in relation to said second part of said machine,

said spiral-like passages are closed across the top of said side walls by a surface of revolution formed on said first part of said machine housing said vane wheels,

said surface of revolution formed on said first part of said machine cooperating with a conjugated surface of revolution formed on said top surfaces of said ribs defining said passages on said second part of said machine,

said defined spiral-like passages of revolution having an inlet and an outlet and a continuous progressively varying cross-sectional area from the inlet to the outlet thereof,

each of said surface of revolution and said conjugated surface of revolution being generated about said main axis of rotation of said machine,

whereby the ratio and the gradient of compresson or expansion for a compressible fluid, and the constant volume flow for an incompressible fluid, flowing through said passages between said two spaced vane members circulating therein are imposed by the relative position and configuration of said cooperating conjugated surface of revolution to said surface of revolution generated by the rotation of said vane members about said main axis of said machine and by the difference of the distances of said vane members from said main axis of said machine during their travel from the inlet to the outlet of said spiral-like passages,

the improvement therein which comprises:

said at least one spiral-like passage of revolution having an extended operative portion which is defined by said bottom wall and by a single one of said pairs of rib members, and

said conversion of pressure energy of fluids takes place in the portion of said spiral-like passage of revolution bordered by said one rib member as well as in the portion thereof bordered by said pair of rib members.

4,274,815

ROTARY COMB[I]STION ENGINE OF TROCHOID DESIGN W[I]TH OIL RETURN GROOVE

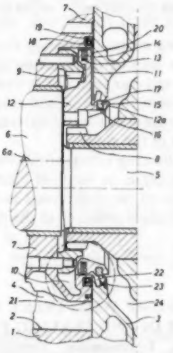
Rolf Lechler, Neckarsulm, and Wulf Leitermann, Bad Wimpfen, both of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Apr. 26, 1979, Ser. No. 33,795

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819664

Int. Cl.[3] **F01C** *1/00, 19/12, 21/06*

U.S. Cl. 418—91 **2 Claims**

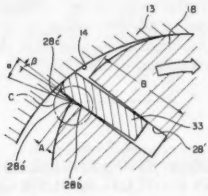


1. A rotary combustion engine of trochoid design comprising; a housing composed of a jacket having a multi-curved inner jacket face and two parallel side walls and a substantially horizontally disposed eccentric shaft which extends through circular apertures in the side walls, a liquid cooled piston rotatably mounted on the eccentric, oil control rings mounted on the piston end walls which coact with the sidefaces of the side walls, a disk provided in at least one piston end wall and rotating with the eccentric shaft concentrically with respect to the rotational axis of the piston and having a hub which extends into the aperture of the side wall, whereby the disk and the hub are provided with sealing rings in tight sealing engagement with the piston end wall and the wall of the aperture, respectively, the sealing rings sealing an annular chamber between said one piston end wall and the adjacent side wall which is limited radially outwardly by the oil control ring, a groove provided in the lower range of the wall of the aperture which receives the hub of the disk, whereby this groove is in communication with the annular chamber and is coupled at its lowermost point with a return line to the liquid cycle by means of a bore which will return liquid in the annular chamber at all times including when the engine is not in operation.

4,274,816
ROTARY VANE COMPRESSOR WITH CHAMFERED VANE SLOTS

Shigeru Kobayashi; Takemi Kanda, and Tsunenori Shibuya, all of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jun. 28, 1979, Ser. No. 52,775
Claims priority, application Japan, Aug. 31, 1978, 53-119802[U]
Int. Cl.³ F04C *18/00, 29/00, 29/02*
U.S. Cl. 418—93 **2 Claims**



1. A rotary compressor including a cylinder having a bore and an inlet and outlet communicating with the bore, a rotor rotatably disposed in the bore and formed with a plurality of radial slots, and a plurality of vanes slidably disposed in the slots respectively and being urged into engagement with a wall of the bore, the cylinder, rotor and vanes being configured in such a manner that fluid is displaced from the inlet to the outlet through the bore upon integral rotation of the rotor and vanes, characterized in that trailing outer edges of the slots are chamfered; and

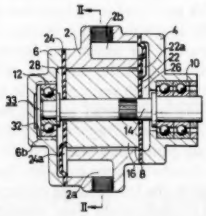
further comprising means for urging the vanes into engagement with the wall of the bore by applying pressurized fluid lubricant to inner ends of the vanes, clearances being provided between the vanes and respective slots which are sufficiently large to allow lubrication of the vanes and adjacent walls of the slots;

said clearances allowing tilting of the vanes in the slots by a predetermined angle, an angle of chamfering of the trailing outer edges of the slots being in the range from the predetermined angle plus 0.5° to the predetermined angle plus 1.5°.

4,274,817
ROTARY VANE PUMP WITH INLET AND DISCHARGE PORTS IN END SEALING PLATES

Hiroshi Sakamaki, Utsunomiya; Toshiyuki Maeda, Ageo; Fumihiro Ushijima, and Tadashi Saitou, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 4, 1979, Ser. No. 45,356
Claims priority, application Japan, Jun. 6, 1978, 53/68111
Int. Cl.³ F04C *27/00, 29/00*
U.S. Cl. 418—133 **8 Claims**



1. In a rotary fluid pump including a housing having a generally cylindrical cavity extending therethrough, a pair of recessed end heads assembled at opposite ends of the housing to form a pump cavity therewith, a drive shaft journalled in said end heads by bearings and extending into the interior of the pump cavity, a rotor mounted on the drive shaft within the pump cavity, a pair of sealing plates individually disposed between the ends of the housing and the end heads to divide the pump cavity into a pair of end chambers defined by the end heads and the sealing plates and an intermediate rotor chamber defined by the sealing plates and, a plurality of vanes slidingly disposed in grooves radially formed in the rotor, the improvement comprising;

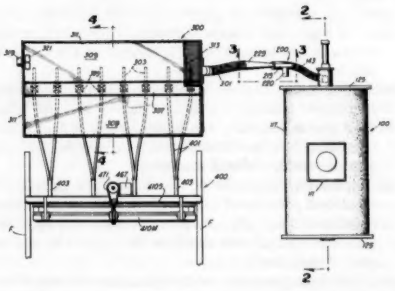
said sealing plates being resilient to allow for deformation and extending from said drive shaft radially outward to said housing;

fluid inlet and discharge ports provided in the resilient sealing plates in fluid communication with said pump cavity, and wherein said resilient plates isolate said end chambers to prevent fluid communication between said ports and said end chambers.

4,274,818
APPARATUS FOR PRE-EXPANDING AND MOLDING THERMOPLASTIC POLYMER PARTICLES

Robert L. Montgomery, and Stuart B. Smith, both of Conyers, Ga., assignors to Southeastern Foam Products, Inc., Conyers, Ga.

Division of Ser. No. 827,873, Aug. 26, 1977, abandoned. This application Aug. 31, 1979, Ser. No. 71,763
Int. Cl.³ B29D *27/00*
U.S. Cl. 425—4 R **11 Claims**

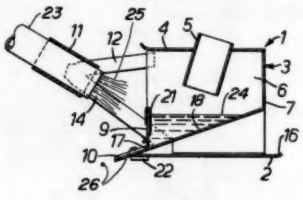


1. Apparatus for expanding and molding thermoplastic polymer particles comprising hopper means for receiving said particles, container means for receiving said particles from said hopper means, means to agitate and to heat said particles in a dry state within the container means, means for performing the functions of first evacuating the container means to draw the particles from the hopper means into the container means and second pressurizing the container means with a hot dry gaseous medium to uniformly soften said particles without expanding them and then evacuating the container means to a preselected degree of vacuum to expand the particles in the container means, means to mold expanded particles taken from the container means into an integral fused mass, and vacuum conveyor means interconnecting the container means and said molding means for extracting the expanded particles from the container means into the means to mold expanded particles.

4,274,819
APPARATUS FOR MAKING SHOT

Wilfred A. R. Talbot, 28, Middle La., Cherhill, Calne, Wiltshire, England

Filed Sep. 25, 1979, Ser. No. 78,848
Claims priority, application United Kingdom, Jun. 2, 1977, 23508/77
Int. Cl.³ B22D 11/01
U.S. Cl. 425—6 6 Claims

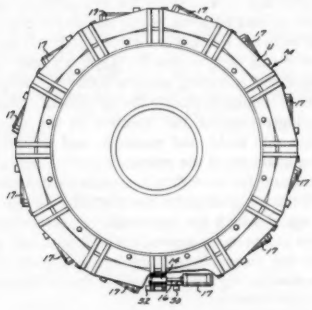


1. An apparatus for making shot which comprises:
a container for holding metal used to make shot, said container having a bottom wall and a side wall, openings formed in said side wall through which molten metal can pass;
an inclined chute leading down and away from said container and below said openings;
a holder attached to said container adjacent said side wall and adapted to hold a heating means capable of melting metal to a flowing condition and cause heat to be directed toward said side wall, whereby to heat the metal in said container and optionally said side wall and said chute and melt said metal to a flowing condition, whereby molten metal passes through said openings and drops onto said chute.

4,274,820
LOCK SYSTEM FOR TIRE CURING APPARATUS

Louis T. Fike, Hacienda Heights, Calif. 91745

Filed May 27, 1980, Ser. No. 153,763
Int. Cl.³ B29H 5/02, 5/04
U.S. Cl. 425—29 9 Claims

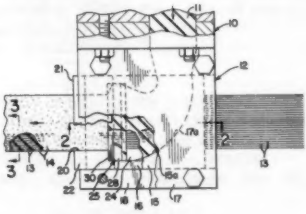


1. A quick-release lock system for tire curing apparatus having a lower matrix that receives the lower part of a tire to be cured and an upper matrix that receives the upper part of the tire to be cured, with the matrices being vertically separable to receive said tire, and said apparatus further including tire inflating means for pressurizing said tire, said quick-release lock system comprising:
a plurality of lock arms having their lower ends secured to said lower matrix at circumferentially spaced points therearound, the upper portion of each of said lock arms having a keeper formed with a horizontal passage;
a plurality of lug means formed on said upper matrix at circumferentially spaced points therearound in general vertical alignment with said lock arms, said lug means each being formed with opening means that are horizontally aligned with the passages of said lock arm keepers when said upper matrix is positioned upon said lower matrix;
a plurality of wedge locks, each horizontally aligned with the opening means of each of one of said lug means and movable horizontally from an unlocked position to one side of the keeper passage of its respective lock arm to a locked position bridging said opening means and said passage so as to secure said upper matrix to said lower matrix;
power-operated means on said upper matrix for urging said wedge locks between their locked and unlocked positions;
sensing means operatively associated with each of said wedge locks to detect whether or not each of said wedge locks have been urged into their locked position; and
means operated by said sensing means to prevent the tire inflating means from inflating said tire unless each of said wedge locks is disposed in its locked position.

4,274,821
DIE FOR EXTRUDING REINFORCED FABRIC

Ralph F. Kiemer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Feb. 28, 1980, Ser. No. 125,667
Int. Cl.³ B21C 3/02; B29F 3/10
U.S. Cl. 425—114 8 Claims



1. A die for extruding an elastomeric ribbon reinforced with laterally spaced longitudinal filaments, said die enclosing a guide insert having uniformly laterally spaced co-planar filament guide passageways therethrough, said insert being undercut on one side at its discharge end to form exposed groove extensions of said guide passageways, and said die having passageways forming a constricted throat around the discharge end of said insert for extruding elastomeric material around filaments emerging therefrom, whereby the exiting portions of said filaments are partially encapsulated before they leave the groove extensions.

4,274,822
APPARATUS FOR FORMING SEAL LINERS OF THERMOPLASTIC MATERIAL WITHIN CLOSURE CAP SHELLS

Shuichi Tamai, Osaka, and Norihide Matsuyama, Toyonaka, both of Japan, assignors to Osaka Nagayanagi Cork Ind., Co., Ltd., Osaka, Japan

Filed Aug. 28, 1979, Ser. No. 70,638
Claims priority, application Japan, Aug. 28, 1978, 53-105073
Int. Cl.³ B29D 27/00
U.S. Cl. 425—127 14 Claims

1. An apparatus for forming seal liners of thermoplastic foaming material within closure cap shells comprising:

a plurality of movable dies each having an inner die and an annular outer die,

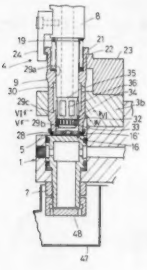
each of said inner and outer dies being movable up and down,

said inner die having a cylindrical lower end portion which is slidably disposed within said annular outer die and has a lower end wall for radially spreading a measured amount of fused thermoplastic foaming material placed on a horizontal wall of an interior surface of a cap shell, as said inner die takes its lowermost position,

said annular outer die having a cylindrical lower end portion whose external diameter is substantially equal to an internal diameter of said cap shell, so that a cylindrical external circumferential wall of said cylindrical lower end portion is in contact with a substantially upwardly extending wall of said interior surface of the cap shell when said outer die is in its lowermost position,

said inner die being so arranged as to still continue its downward movement to its lowermost position after said outer die has taken its lowermost position,

means for restricting downward movement of said outer die so as to prevent its lower end wall from contacting said horizontal wall of said cap shell thereby to provide a



certain constant clearance between said lower end wall of the outere die and said horizontal wall of said cap shell,

an annular recess formed in a lower end circumference of said inner die,

said annular recess being communicated with said clearance so that an annular foaming chamber of a constant capacity, for forming a thick annular pad portion of said seal liner, is formed beneath said lower end wall of the outer die when both of said outer and inner dies are in their lowermost positions,

means for restricting upward movement of said outer die when said thermoplastic foaming material is forcibly pushed into said foaming chamber,

a plurality of gas discharging grooves formed in a relatively slidable area existing between a cylindrical external surface of said cylindrical lower end portion of said inner die and a cylindrical internal surface of said cylindrical lower end portion of said outer die, said area being located above said annular foaming chamber and inwardly spaced apart from said upwardly extending wall of said interior surface of said cap shell, and

said foaming chamber being communicated with the atmosphere through said gas discharging grooves.

4,274,823

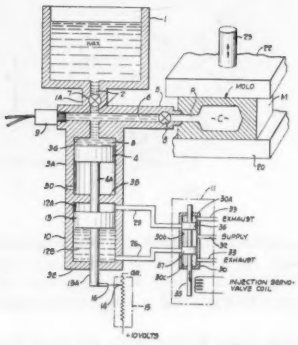
WAX INJECTION MOLDING APPARATUS AND CONTROL SYSTEM

Virgil V. Stanciu, Rocky River; Robert A. Cutler, Chardon, and Kenneth R. Kasper, Parma, all of Ohio, assignors to Tempcraft Tool & Mold Inc., Cleveland, Ohio

Filed Mar. 27, 1979, Ser. No. 24,263

Int. Cl.[3] B29F *1/06*

U.S. Cl. 425—145 **26 Claims**



1. In combination, an investment pattern molding machine having a source of fluid molding material and a movable ram and a mold into which said material is to be forced under pressure by means of said movable ram moving through a predetermined distance in a fluid injection direction and thereafter returned to a fluid charging position, control means for initiating a molding cycle for injecting wax into said mold, a servo-control operably connected with said control means and responsive thereto to sense and control the movement of the movable ram and the pressure of said fluid molding material as generated by said movable ram forcing said material into said mold, said servo-control comprising means for actuating the movable ram and for effecting the movement thereof in a direction to initiate the injection of the fluid molding material into said mold, means operatively connected to said movable ram and to provide a first signal representative of the movement of the movable ram, means for providing a reference control signal that is representative of the movement desired for said ram in said molding cycle, means for comparing the first signal with the reference control signal and to provide a differential signal, and means for applying said differential signal to said ram actuating means effective corresponding to said differential signal to modify the movement of said ram and correspondingly regulate the injection of the fluid molding material into said mold, and means in said servo-control for limiting the quantum of the reference control signal comprising circuit means for providing a preselected maximum acceleration reference signal and a preselected maximum velocity reference signal which are representative respectively of the acceleration and velocity desired for said ram, and said servo-control having means for combining said acceleration and velocity reference signals to provide the reference control signal.

4,274,824

MOLD BOX APPARATUS

Wayne L. Mullins, 5001 E. Cactus, Scottsdale, Ariz. 85254

Continuation-in-part of Ser. No. 947,590, Oct. 2, 1978, Pat. No. 4,218,206. This application Apr. 10, 1980, Ser. No. 139,096

Int. Cl.[3] A21C *3/00*

U.S. Cl. 425—253 **11 Claims**

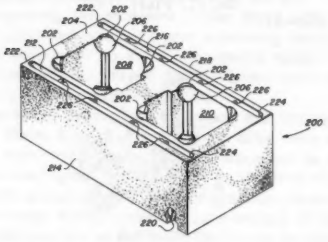
1. A mold box apparatus for casting cementitious blocks with a channel in at least one of the sidewalls thereof in which

thermally insulative foam is subsequently castable, said mold box apparatus comprising:

(a) a mold box die which is open at the top and bottom and has at least one compartment which forms the side and end walls of the block when cement is deposited therein;

(b) a pallet die positioned in engagement with said mold box die to close the bottom thereof;

(c) a core die assembly mounted on said mold box die so as to span the open top thereof, said core die assembly having a spaced pair of core dies depending therefrom into the compartment of said mold box die to form vertical passages centrally through the block formed upon deposition of cement therein; and



(d) at least one channel die assembly mounted on said mold box die so as to span the open top thereof and disposed to be laterally adjacent and parallel with respect to said core die assembly, said channel die assembly having a plurality of aligned channel dies depending therefrom to form a channel within one of the sidewalls of the block when cement is deposited in the compartment of said mold box die, said plurality of channel dies spaced from the mold box die, spaced from the pallet die and spaced from each other so that the channel formed in the block upon deposition of cement into said mold box die has its opposite ends closed by thin-wall cementitious webs, has its bottom closed by a thin-wall cementitious web, and has a plurality of cementitious thin-wall stabilizer webs formed transversely in the channel.

4,274,825

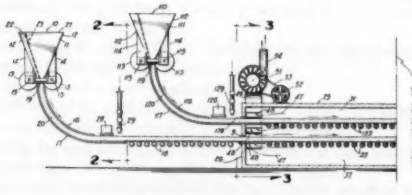
PROCESS AND APPARATUS FOR PRODUCING CELLULATED VITREOUS REFRACTORY MATERIAL IN PRESCRIBED SHAPES AND PRODUCTS THEREFROM

John W. North, 3467 Pierce Dr., NE., Chamblee, Ga. 30341

Division of Ser. No. 888,507, Mar. 20, 1978, Pat. No. 4,190,416. This application Dec. 10, 1979, Ser. No. 101,900

Int. Cl.³ F21B *14/00*

U.S. Cl. 432—13 **33 Claims**



16. A process of providing a charge for a kiln, comprising in a die cavity covering the bottom thereof with a release agent, applying a mixture of solid carbonaceous aggregate and binder over said release agent, placing a charge of mineral and cellulating agent on said mixture and pressing same together.

4,274,826

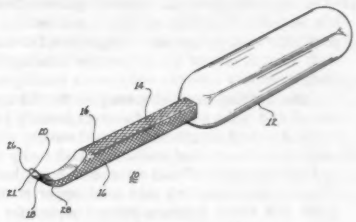
DENTURE ADJUSTMENT TOOL

Elbert P. Huey, 4714 E. Lafayette Blvd., Scottsdale, Ariz. 85018, and Adrian W. Craig, 6703 E. McDonald Dr., Scottsdale, Ariz. 85253

Filed Oct. 18, 1979, Ser. No. 85,896

Int. Cl.³ A61C *3/06*

U.S. Cl. 433—144 **2 Claims**



1. A one piece multi-function manual denture adjustment tool, said tool comprising in combination:

(a) a handle for gripping said tool;

(b) a shank square in cross-section and extending from said handle, said shank including an abrasive surface disposed on the sides of said shank; and

(c) a dual tapered claw disposed at the extremity of said shank, said claw including a terminal tip and a curved cutting edge extending from either side of said tip toward said shank, said claw further including two opposed sides of widths diminishing toward said tip and defining the curvature of said claw, said diminishing width opposed sides having abrasive surface and being extensions of respective ones of said abrasive sides of said shank to define variable width abrasive surfaces.

4,274,827

PROPULSION SYSTEM FOR A MARINE VESSEL

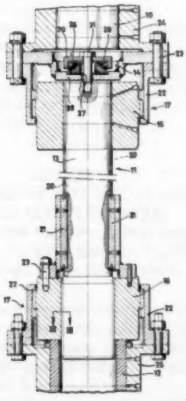
Wilhelmus M. Catsburg, Capelle A/D Ijssel, Netherlands, assignor to Schottel Nederland B.V., Netherlands

Filed Sep. 15, 1978, Ser. No. 942,624

Claims priority, application Netherlands, Sep. 19, 1977, 7710276

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—54 **1 Claim**



1. A propulsion system for a marine vessel, comprising:

(A) a vertical sleeve;

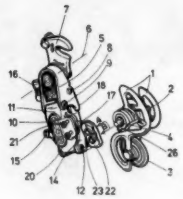
(B) a drive motor located near the upper end of said sleeve and including a vertically extending output shaft;
(C) a steerable propeller comprising:
(1) a steering tube coupled to said sleeve for rotation about a vertical axis;
(2) swivel drive means coupled to the top of said steering tube for rotating said steering tube about said vertical axis;
(3) a telescopable drive shaft extending through said steering tube and including an upper portion and a lower portion, said upper portion being coupled to said output shaft of said motor by a footstep bearing including complementary concave and convex bearing parts, said concave bearing part being coupled to said upper portion of said drive shaft, said convex bearing part being coupled to said output shaft of said motor;
(4) said upper portion of said drive shaft being solid and said lower portion of said drive shaft being hollow and telescopically receiving said solid upper portion, said upper and lower portions being coupled for rotation with one another by a self-adjusting rotary coupling, said rotary coupling including inner and outer concentric rings;
(5) an underwater housing coupled to the bottom of said steering tube for rotation therewith, said underwater housing enclosing drive gears coupling a ship's propeller to said drive shaft; and
(D) means for raising and lowering an assembly including said steering tube, said lower portion of said drive shaft, said underwater housing and said swivel drive means between an upper position wherein said assembly is fully withdrawn into said sleeve and a lower position wherein said propeller extends below said sleeve; and
(E) said inner concentric ring having teeth which interlock with corresponding teeth on said upper portion of said drive shaft when said assembly is in said lower position, said inner ring also having a pair of spigots attached thereto, said spigots engaging respective grooves in said upper portion of said drive shaft such that the orientation of said upper and lower portions of said drive shaft remain constant as said lower portion of said drive shaft moves from said upper to said lower position to reengage said interlocking teeth.

4,274,828

DERAILLEUR GEAR-CHANGE ASSEMBLY FOR A BICYCLE

Roger Huret, 60, avenue Félix Faure, Nanterre, France

Filed Jan. 31, 1979, Ser. No. 7,990
Claims priority, application France, Feb. 2, 1978, 78 03271
Int. Cl.³ F16H *11/00*
U.S. Cl. 474—82 **3 Claims**



1. A derailleur gear-change assembly for a bicycle having a support cage itself carrying a chain-guide wheel and a chain tensioning wheel as well as a support means for said cage, said support means consisting of a deformable parallelogram for producing translatory movement of the cage under the action of a cable and for passing the chain from one sprocket wheel of a freewheel of the bicycle to another sprocket wheel, the improvement comprising a derailleur gear-change assembly in which several perforations are provided on the arm of the deformable parallelogram for the adjustable fixing of the cage.

4,274,829

CONTINUOUS DYEING PROCESS IN ORGANIC SOLVENT VAPORS

Jacques Zurbuchen, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 664,450, Mar. 8, 1976, abandoned. This application Oct. 4, 1978, Ser. No. 948,620

Claims priority, application Switzerland, Mar. 14, 1975, 3263/75; Apr. 3, 1975, 4222/75

Int. Cl.[3] D06P *1/68*

U.S. Cl. 8—475 18 Claims

1. A process for the continuous dyeing of synthetic textile fibers from organic solvent, comprising the steps of

(1) Preheating the textile fibers to at least 100° C.;

(2) Impregnating the preheated textile fibers with a hot halogenated hydrocarbon liquor, containing dyestuff or optical brightener, to form impregnated textile fibers containing between 150 and 300% of liquor, based on the dry weight of the textile fibers; and

(3) Immediately passing the preheated and impregnated textile fibers through a vapor zone filled with superheated vapors of the halogenated hydrocarbon, in such a manner that during passage of the textile fibers through the vapor zone the absorbed liquor becomes concentrated on the textile fibers, whereby (a) the amount of halogenated hydrocarbon on the textile fibers is not increased by condensation of halogenated hydrocarbon vapor, and (b) more than 5% of absorbed liquor is present on the textile fibers when they emerge from the vapor zone, so that the textile fibers during the passage through the vapor zone never become dry.

4,274,830

COLORED MEDICINAL TABLET, NATURAL COLOR PIGMENT AND METHOD FOR USING THE PIGMENT IN COLORING FOOD, DRUG AND COSMETIC PRODUCTS

Edward J. Woznicki, Douglassville; Lawrence J. Rosania, North Wales, and Keith Marshall, Ft. Washington, all of Pa., assignors to Colorcon, Inc., West Point, Pa.

Filed Sep. 27, 1977, Ser. No. 837,301

Int. Cl.[3] D06P *3/58;* A61K *47/00, 9/36*

U.S. Cl. 8—495 4 Claims

1. A method of coloring a pharmaceutical tablet comprising:

suspending 100 g. of finely divided powdered corn starch in about 1800 ml. of water,

adding 50 g. of a 30% (W/V) aluminum chloride solution in water to the corn starch suspension,

heating the suspension to about 50° C.,

dissolving 10 g. of curcumin in 800 ml. of water containing 3.2 g. of sodium hydroxide to form a dye solution,

adding the dye solution in a fine stream to the corn starch suspension while stirring the suspension rapidly,

continuing the stirring until all the curcumin is attached to the corn starch particles,

filtering the resulting slurry to obtain a filtered cake,

washing the filtered cake with water, and

drying the filtered cake at about 50° C. in a hot air oven to obtain a powdered natural dye pigment, suspending said pigment in a coating solution and coating the tablet with said coating solution.

4,274,831

PROCESS FOR DYEING OR PRINTING SYNTHETIC FIBER MATERIALS BY MEANS OF DISPERSE DYES, AND COLORANT COMPOSITIONS UTILIZABLE FOR THIS PURPOSE

Gerard L.A. Belfort, Oissel, and Daniel P. A. Richer, Bosc Roger en Roumois, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Jun. 30, 1978, Ser. No. 921,040

Claims priority, application France, Jul. 28, 1977, 77 23221

Int. Cl.[3] D06P *3/872, 3/874, 1/673, 1/653*

U.S. Cl. 8—532 10 Claims

1. A process for dyeing materials containing synthetic fibers by means of disperse dyes which comprises carrying out the dyeing by the exhaustion method in the presence of at least one metallic salt of an inorganic or organic acid, the metal having an atomic number in the range of 24 through 30, said metallic salt being added in an amount of 0.2 to 2% by weight expressed as metal in relation to the disperse dye.

4,274,832

ANALYTICAL ELEMENT AND METHOD FOR ANALYSIS OF MULTIPLE ANALYTES

Tai-Wing Wu, Rochester, and Glen M. Dappen, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,605

Int. Cl.[3] G01N *33/00, 33/52, 33/72, 33/92*

U.S. Cl. 23—230 R 17 Claims

17. A method for the analysis of analytes in a liquid, said method comprising

(a) contacting together said liquid an an analytical element having an essentially dry matrix permeable to said liquid, at least a portion of said matrix comprising

(i) a first interactive composition for the generation of a first radiometrically detectable species in an amount corresponding to the presence and/or concentration of one analyte, or a reaction or decomposition product thereof, and

(ii) a second interactive composition for the inhibition or the destruction of a second radiometrically detectable species in an amount corresponding to the presence and/or the concentration of a second analyte, or a reaction or decomposition product thereof;

said first and second interactive compositions being in liquid contact with one another within said matrix during use, with at least a portion of one of said interactive compositions contained in said reagent layer, and each of said first and second radiometrically detectable species having a characteristic, detectable absorption or emission peak; and

(b) radimetrically detecting, after a predetermined time, a separate detectable change occurring in said element in response to the presence and/or concentration of each of said analytes, at least one detectable change being the result of said inhibition or destruction of said second radiometrically detectable species.

4,274,833

NINHYDRIN REAGENT FOR USE IN AMINE AND AMINO ACID ANALYSES

Michael V. Pickering, 4081 Park Blvd., Palo Alto, Calif. 94306

Filed Oct. 18, 1979, Ser. No. 86,234

Int. Cl.[3] C09K *3/00;* G01N *33/48, 31/22, 31/08*

U.S. Cl. 23—230 B 3 Claims

1. A buffered aqueous ninhydrin reagent having from about 0.5 to 2 weight percent of ninhydrin, sulfolane and water at a ratio of from at least about 0.5 parts to not more than 1.5 part by weight of sulfolane per part of water, said reagent having a pH in the range of about 3 to 9.

3. In a method for analyzing an analyte which is one or a mixture of amino acids, primary or secondary amines, employing an ion exchange column and reacting the eluent from said ion exchange column with ninhydrin to reagent produce a colored product whose concentration is related to the amount

of analyte in said eluent, and monitoring the light absorption of said colored product in said eluent, the improvement which comprises employing as a ninhydrin reagent for production of such color, a composition according to claim 1.

4,274,834

PROCESS FOR PURIFICATION OF LITHIUM CHLORIDE

Patrick M. Brown, Exton, and Susan R. Jacob, Royersford, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Apr. 11, 1979, Ser. No. 28,974
Int. Cl.³ C01D *3/08, 15/02*
U.S. Cl. 23—302 R **3 Claims**

1. A process for purifying lithium chloride containing small amounts of impurities such as sodium, potassium, calcium, boron, sulfate and/or organic compounds which comprises heating lithium chloride contaminated with one or more of said impurities to a temperature in the range of from about 270° to about 325° C., cooling said lithium chloride to ambient conditions, extracting said lithium chloride with isopropanol, separating the liquid phase from the solid phase, removing said isopropanol from said liquid phase, and recovering a solid lithium chloride product of high purity.

4,274,835

METHOD AND COMPOSITION FOR MODIFYING BURNING OF SULFUR IN COALS AND HYDROCARBON FUELS

Frederick L. Jordan, Santa Ana, Calif., assignor to Oryx, Inc., Santa Ana, Calif.

Filed Nov. 5, 1979, Ser. No. 91,065
Int. Cl.³ C10L *9/10, 1/10*
U.S. Cl. 44—1 SR **7 Claims**

1. The method of improving combustion efficiency and reducing sulfur combustion emissions from burning of coal comprising burning coal in the presence of small amounts of squalane, squalene, or a carotenoid, or mixtures thereof.

3. A liquid hydrocarbon fuel having intermixed therein small amounts, in the parts per million range, of carotene.

4,274,836

METHOD FOR IMPROVING BED FIRING CHARACTERISTICS AND INHIBITING COALESCENCE OF COAL PELLETS

Thomas E. Ban, South Euclid, and William H. Marlowe, Euclid, both of Ohio, assignors to Dravo Corporation, Pa.

Filed Apr. 20, 1979, Ser. No. 31,992
Int. Cl.³ C10L *5/32*
U.S. Cl. 44—6 **10 Claims**

1. A method of reducing the swelling characteristics and bed coalescence characteristics of a pelletized fuel during a sintering operation comprising the steps of pulverizing the coal to form a powdery mass, forming said mass into discrete pellets, providing on the surface of said pellets a coating substance selected from the group consisting of sodium carbonate, burnt lime, and hydrated lime, drying said pellets and heating said pellets to a temperature exceeding 800° F.

4. A method according to claim 1, wherein the coating substance is initially mixed with the powdery mass and migrates to the surface of the pellets during the drying step.

7. A method according to claim 1, wherein said coated material is deposited directly on the surface of the pellet prior to drying the pellet.

4,274,837

DEPOSIT CONTROL ADDITIVES AND FUEL COMPOSITIONS CONTAINING THEM

Jennifer E. Lilburn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 931,232, Aug. 8, 1978, Pat. No. 4,197,409.
This application Jul. 2, 1979, Ser. No. 54,119
Int. Cl.³ C10L *1/22, 1/18*
U.S. Cl. 44—63 **17 Claims**

1. A fuel composition comprising a major amount of hydrocarbons boiling in the gasoline range and from 30 to 2,000 ppm of the deposit control additive hydrocarbylpoly(oxyalkylene) aminocarbamate having a molecular weight of from about 600 to 10,000, at least one C_1–C_{30} hydrocarbyl-terminated poly(oxyalkylene) chain and at least one basic nitrogen atom;

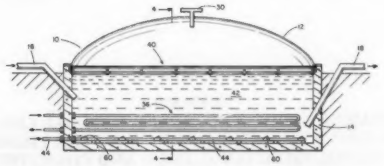
wherein said poly(oxyalkylene) chain comprises from one to five oxylkylene units each containing from 9 to 30 carbon atoms and other oxyalkylene units selected from 2 to 5 carbon oxyalkylene units.

4,274,838

ANAEROBIC DIGESTER FOR ORGANIC WASTE

Eugene M. Dale, Montevallo, Ala., and Jerry A. Malstrom, Ludington, Mich., assignors to Energy Harvest, Inc., Chicago, Ill.

Filed Oct. 1, 1979, Ser. No. 80,940
Int. Cl.³ C02F *11/04;* **C12M** *1/04;* **C12P** *5/02*
U.S. Cl. 48—111 **8 Claims**



1. An anaerobic digester for producing combustible gas from organic waste comprising:

(a) a digester tank having an input end adapted to receive a fluid slurry containing said organic waste and an output end from which the slurry is discharged from the tank, said tank including an air tight flexible membrane and an outlet therefrom disposed over said tank into which the gas passes as it evolves from the slurry;

(b) means for introducing the slurry into said tank at said input end and means for removing the slurry from said output end after passage through said tank;

(c) means for heating the slurry to a temperature conducive to anaerobic digestion of the organic wastes thereby to generate said gas;

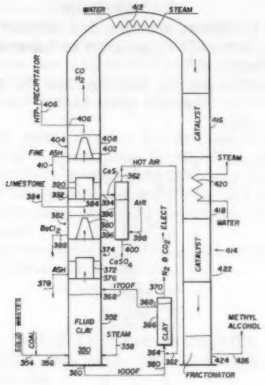
(d) means for suppressing the formation of scum on the surface of the slurry while resident in said tank, said suppressing means including a plurality of panels floatably positioned on the surface of said slurry, whereby scum is maintained below the surface of the slurry in a wet condition to ensure digestion;

(e) means for maintaining the panels in position to maintain spacing therebetween and means to prevent dislocation thereof when the slurry is above or below normal levels in said tank.

4,274,839
PROCESS FOR GASIFICATION OF COAL AND ORGANIC SOLID WASTES

Arnold M. Leas, 122 N. 34th St. Towne House Village, Richmond, Ind. 47374

Filed Dec. 28, 1979, Ser. No. 108,110
Int. Cl.[3] C10J 3/54
U.S. Cl. 48—202 10 Claims



1. A process for coal and organic solid waste gasification comprising the steps of:

converting water in an aqueous feed stock to steam;

gasifying coal and organic solid waste feedstocks in the presence of said steam using a granular fluidized clay to produce a gaseous product composed primarily of carbon monoxide and hydrogen;

removing hydrogen chloride from said gaseous product by injecting barium carbonate to react with hydrogen chloride to form barium chloride, and removing said barium chloride;

removing hydrogen sulfide from said gaseous product by contacting said gaseous product with lime to react with hydrogen sulfide to from calcium sulfide, and removing said calcium sulfide for external oxidation to calcium sulfate and recovering said calcium sulfate;

thereafter removing residual micronic particulates and vaporized metallic chlorides from said gaseous product using high temperature precipitating agents to finally clean the product gases consisting essentially of carbon monoxide and hydrogen;

regenerating barium carbonate by reacting said recovered barium chloride with a water solution of sodium carbonate to from barium carbonate and sodium chloride;

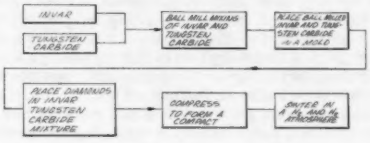
circulating carbon containing granular fluidized clay, used to gasify the coal and organic solid waste feedstocks in the presence of steam, to an air burner to burn said carbon to yield a producer gas containing carbon monoxide and carbon dioxide, and returning the decarbonized granular fluidized clay to gasify additional coal and organic solid waste feedstocks in the presence of steam; and

reducing a metal oxide with said carbon monoxide in said producer gas to produce a reduced metal, and reoxidizing said reduced metal to metal oxide with steam to generate hydrogen gas.

4,274,840
WEAR RESISTANT COMPOSITE INSERT, BORING TOOL USING SUCH INSERT, AND METHOD FOR MAKING THE INSERT

Robert J. Housman, Irvine, Calif., assignor to Smith International, Inc, Newport Beach, Calif.

Filed Jan. 8, 1979, Ser. No. 1,900
Int. Cl.[3] C04B 35/52
U.S. Cl. 51—307 10 Claims


INVAR
TUNGSTEN CARBIDE
BALL MILL MIXING OF INVAR AND TUNGSTEN CARBIDE
PLACE DIAMONDS IN INVAR TUNGSTEN CARBIDE MIXTURE
COMPRESS TO FORM A COMPACT
SINTER IN A H2 AND N2 ATMOSPHERE

1. A method of making a wear resistant insert for earth boring tools and the like consisting essentially of the steps of:

(a) mixing powdered Invar with powdered tungsten-carbide;

(b) placing diamonds in a desired array in the mixture;

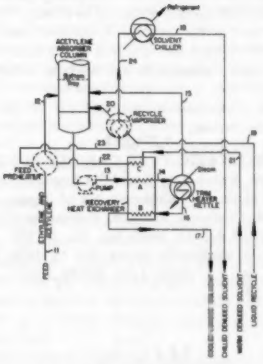
(c) compressing the mixture of Invar and tungsten-carbide and diamonds to consolidate them; and then

(d) sintering the Invar at a temperature below the melting point of Invar and in an atmosphere of nitrogen and hydrogen to form a matrix for the tungsten-carbide and diamonds.

4,274,841
ACETYLENE RECOVERY PROCESS AND APPARATUS

Harvey E. Andresen, and Thomas F. Persohn, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 28, 1980, Ser. No. 134,948
Int. Cl.[3] B01D 53/16
U.S. Cl. 55—40 8 Claims



1. An improved process for the recovery of acetylene from gas containing acetylene and ethylene comprising: contacting said gas with an acetylene solvent to form a loaded solvent solution; warming and partially boiling said loaded solvent solution by passing through a first stream conduit of a heat exchange zone having a plurality of non-interconnecting stream conduits passing therethrough in heat exchange thermal contact; separating the resulting liquid/vapor mixture and passing the liquid phase to a second stream conduit of said heat exchange zone, thereby permitting the temperature thereof to drop substantially before said liquid phase passes on to a downstream further separation step for the removal of further purified acetylene product; and warm denuded acetylene solvent is cooled to lower temperature initially by passage through a

third stream conduit of said heat exchange zone and then further cooling before passage to said acetylene solvent contacting zone; whereby greater thermal efficiency is effected in the process.

7. Improved apparatus for the recovery of acetylene from a feed gas stream containing acetylene and ethylene and produced by the cracking of hydrocarbon feedstock, which comprises: absorber column means for contacting said gas stream under pressure with an acetylene solvent in a quantity sufficient for the absorption of substantially all of the acetylene and some of the ethylene of said feed gas stream to form a loaded solvent solution heater means for warming and partially boiling said loaded solvent solution by passing through a first set of stream conduits of a recovery heat exchanger having a first set of non-interconnecting stream conduits passing therethrough, each set in heat exchange thermal contact with the others so as to form a temperature gradient across said recovery heat exchanger; trim heat kettle means for separating the resulting liquid/vapor mixture; means for passing the separated liquid phase to a second set of stream conduits of said recovery heat exchanger to cause the temperature thereof to drop substantially before said liquid phase passes on to a downstream further separation step for the removal of further purified acetylene product; and means for cooling warm denuded acetylene solvent to lower temperature initially by passage through a third set of stream conduits of said recovery heat exchanger means for further cooling before passage of said denuded acetylene solvent to said absorber column.

4,274,842

METHOD OF PURIFYING GAS CONTAINING GASEOUS MERCURY

Leif A. V. Lindau, Växjö, Sweden, assignor to AB Svenska Flaktfabriken, Stockholm, Sweden

Filed Jan. 10, 1980, Ser. No. 111,126
Claims priority, application Sweden, Jan. 10, 1979, 7900209
Int. Cl.³ B01D *53/12*
U.S. Cl. 55—72 **3 Claims**

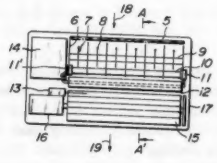
1. A method of purifying gases containing gaseous mercury, characterized in that the gas is caused to contact a solid sorbent consisting of powdered calcium hydroxide and of reaction from the reaction between calcium hydroxide and gaseous hydrogen chloride, whereafter the sorbent is separated in a dust separator.

4,274,843

ELECTROSTATIC TYPE CAR AIR PURIFIER

Masazumi Sone, Yokohama; Kazuhiko Suzuki, Yokosuka, and Yukitsugu Fukumori, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jul. 11, 1979, Ser. No. 56,808
Claims priority, application Japan, Jul. 19, 1978, 53-98328[U]
Int. Cl.³ B03C *3/32*; B60H *3/06*
U.S. Cl. 55—139 **1 Claim**



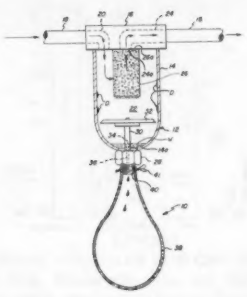
1. In an electrostatic type car air purifier having an air inlet and an air outlet comprising an electrostatic dust collector portion, a negative ion generator, and a high voltage generating portion having outputs for producing high voltages for operating respectively the dust collector portion and the negative ion generator, a system for reducing generation of electromagnetic noise from the high voltage generating portion comprising a high resistance means in series with rectifying diode means in the respective outputs of the high voltage generating portion, each of said high resistance means including a plurality of resistances connected in tandem to improve filtering by reduced stray capacitance across the resistance means and increased stray capacitance to a ground, wherein the resistance value of said high resistance means is between 500 kΩ and 2 MΩ.

4,274,844

EVAPORATOR

Richard C. Baughman, Geneseo, and Michael A. Giometti, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,874
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—196 **5 Claims**



1. In a filter adapted to be coupled to a pneumatic line for removing liquid from flow in such line, said filter including a liquid accumulating housing, and means for removing liquid from the flow and accumulating such liquid in the interior of said housing, the improvement comprising means for evaporating such accumulated liquid, said evaporating means including:

a wick of liquid absorbent, porous material located solely exteriorly of said housing and removably connected to the exterior of said housing for absorbing liquid and holding such liquid for evaporation to the atmosphere; and

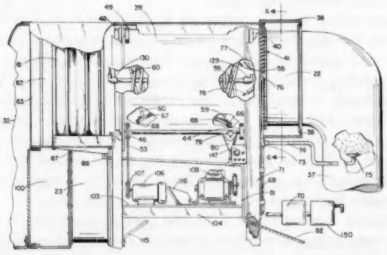
means for defining a passage for such liquid between the interior of said housing and said external wick so that accumulated liquid drains from said housing into said wick.

4,274,845

AIR-CLEANING, HEAT-EXCHANGE APPARATUS

Arthur G. Howard, 1134 Golfview Dr., Carmel, Ind. 46032

Filed Jul. 12, 1978, Ser. No. 923,713
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—222 **14 Claims**



1. An air-cleaning, heat-exchange apparatus having means

defining a flow path for removing grease and extracting heat from grease-laden, hot exhaust of a restaurant exiting from said restaurant by way of an exhaust stack, said air-cleaning, heat-exchange apparatus comprising:

a spiralled arrangement of metal tubing disposed in the flow path of said hot exhaust and rotatable about an axis which is substantially parallel with the flow direction of said hot exhaust, said spiralled arrangement being adapted for circulation of a heat-exchange working fluid therethrough and the exterior of said spiralled arrangement providing a contaminant-collecting surface;

means for circulating a heat-exchange working fluid through said spiralled arrangement and between said spiralled arrangement and a location of utilization;

a source of chemical solution wherein the grease of said grease-laden, hot exhaust is soluble to said chemical solution;

spray nozzle means directed at a first end of said spiralled engagement of metal tubing for dissolving grease buildup on the external, contaminant-collecting surface of said spiralled arrangement of metal tubing, said first end being disposed for being first contacted by the flow of said hot exhaust, and

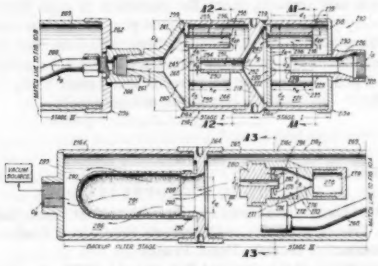
pump means for providing pulses of said chemical solution to said spray nozzle means.

4,274,846

PARTICLE SIZING SAMPLER

Michael L. Smith, Atlanta, Ga., assignor to Andersen Samplers Inc., Atlanta, Ga.

Filed Feb. 21, 1979, Ser. No. 13,401
Int. Cl.³ B01D *53/30*
U.S. Cl. 55—270 **13 Claims**



1. A multiple stage particle sizing sampling device for separating particles from a gaseous medium according to particle diameter so as to classify the particles as the gaseous medium is forced therethrough, said sampling device including first and second stages and comprising:

a housing defining a first stage impaction chamber and a second stage impaction chamber therein, both oriented about a common central axis;

impaction means including a first stage impaction member defining a first stage impaction surface thereon in said first stage impaction chamber oriented generally normal to the central axis, and a second stage impaction member defining a second stage impaction surface thereon in said second stage impaction chamber oriented generally normal to the central axis;

impaction nozzle means including a first stage impaction nozzle operatively associated with said first stage impaction chamber and a plurality of second stage impaction nozzles operatively associated with said second stage impaction chamber, said first stage impaction nozzle defining a first stage impaction jet passage therethrough oriented normal to said first stage impaction surface and having a first stage jet inlet thereto and the first stage jet outlet therefrom, said first stage jet inlet in communication with the gaseous medium to be sampled and said first stage jet outlet sized and located with respect to said first stage impaction surface to cause particles in the gaseous medium to be separated by jet impaction on said first stage impaction surface within said first stage impaction chamber so that said first stage has a first prescribed effective particle cut diameter when the gaseous medium is forced through said first stage impaction jet passage; each of said second stage impaction nozzles defining a second stage impaction jet passage therethrough oriented generally normal to said second stage impaction surface having a second stage jet inlet thereto and a second stage jet outlet therefrom, said second stage jet inlet in communication with the gaseous medium in said first stage impaction chamber and said jet outlet sized and located with respect to a second stage impaction surface to cause particles in the gaseous medium to be separated by jet impaction on said second stage impaction surface within said second stage impaction chamber so that second stage has a second prescribed effective particle cut diameter smaller than said first prescribed effective particle cut diameter when the gaseous medium is forced through said second stage impaction jet passages, said second stage impaction jet passages through said second stage impaction nozzles providing communication between said first stage impaction chamber and said second stage impaction chamber so that the gaseous medium moves from said first stage impaction chamber into said second stage impaction chamber through said second stage impaction jet passages, said second stage jet inlets located in said first stage impaction chamber and spaced from said first stage impaction surface a first exit distance greater than the distance between said first stage jet outlet from said first stage impaction jet nozzle and said first stage impaction surface; the size of said first stage impaction chamber, the first exit distance and the total cross-sectional area of said second stage jet inlets being such that the velocity of the gaseous medium through said first stage impaction chamber is less than one-tenth the velocity of the gaseous medium through said first stage jet outlet to permit the particles that bounce from said first stage impaction surface upon impaction to be collected out of the gaseous medium within said first stage impaction chamber, being such that the velocity of the gaseous medium passing out of said first stage impaction chamber through said second stage jet inlets is less than one-half the velocity of the gaseous medium through said first stage jet outlet to prevent the motion of the gaseous medium flowing out of said first stage impaction chamber into said second stage jet inlets from dislodging and re-entraining particles which have already been separated in said first stage impaction chamber, and being such that the residence time of the gaseous medium in said first stage impaction chamber is at least 0.2 second to permit agglomerated particles dislodged after separation in said first stage impaction chamber to settle out of the gaseous medium as it flows through said first stage impaction chamber; and

at least one second stage exit tube defining an exit passage therethrough having a second stage exit passage inlet thereto in communication with said second stage impaction chamber and a second stage exit passage outlet therefrom, said second stage exit passage inlet located in said second stage impaction chamber and spaced from said second stage impaction surface a second exit distance greater than the distance between said second stage jet outlets from said second stage impaction jet nozzles and said second stage impaction surface; the size of said second stage impaction chamber, the second exit distance and the total cross-sectional area of said second stage exit passage inlet being such that the velocity of the gaseous medium through said second stage impaction chamber is less than one-tenth the velocity of the gaseous medium through said second stage jet outlets into said second stage impaction chamber to permit the particles that bounce from said second stage impaction surface upon impaction

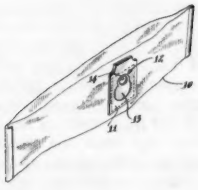
to be collected out of the gaseous medium within said second stage impaction chamber, being such that the velocity of the gaseous medium passing out of said second stage impaction chamber through said second stage exit passage inlet is less than one-half the velocity of the gaseous medium through said second stage jet outlets to prevent the motion of the gaseous medium flowing out of said second stage impaction chamber into said second stage exit passage inlet from dislodging and re-entraining particles which have already been separated in said second stage impaction chamber, and being such that the residence time of the gaseous medium in said second stage impaction chamber is at least 0.2 second to permit agglomerated particles dislodged after separation in said second stage impaction chamber to settle out of the gaseous medium as it flows through said second stage impaction chamber.

4,274,847

VACUUM CLEANER DUST BAG

Bengt O. Crener, Amal, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Sep. 6, 1979, Ser. No. 73,028
Claims priority, application Sweden, Sep. 25, 1978, 7810013
Int. Cl.[3] B01D *46/02*
U.S. Cl. 55—374 **3 Claims**



1. A vacuum cleaner dust bag having a container and a collar of relatively rigid material and adaptable to be connected to an inlet tube of a vacuum cleaner hose, said collar having an opening and comprising: an elastic diaphragm covering said opening on said collar and having an aperture therein forming an opening for said inlet tube which conveys dust from said vacuum cleaner hose to said dust bag, the opening in said collar having a shape such that the inlet tube having a pheripheral flange thereon can be moved through the aperture in said diaphragm without being significantly hindered by said surrounding collar and said collar can be moved laterally so that a portion of its opening which has a diameter that is smaller than the diameter of said peripheral flange engages the flange of the inlet tube and prevents axial displacement of said collar, said opening in said collar comprises a first zone into which the inlet tube is to be inserted and which merges into said portion which is a second zone of smaller proportion, the diaphragm in the second zone being retained on said inlet tube when said collar is moved laterally towards said second zone, and said diaphragm opening is so positioned that the major part of the area of the opening is in said second zone.

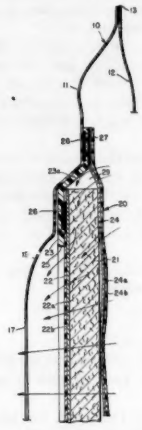
4,274,848

GAS-VENTING FILTER FOR COLLECTION APPLIANCE

Phillip A. La Gro, Des Plaines, Ill., assignor to Hollister Incorporated, Chicago, Ill.

Filed Sep. 24, 1979, Ser. No. 78,514
Int. Cl.[3] A61F *5/44*
U.S. Cl. 55—387 **22 Claims**

1. An odor-adsorbing gas filter assembly for use in collection appliances, comprising a porous filter pad having a pair of opposite planar faces and comprising a network of thermoplastic fibers coated with finely-divided activated carbon, a heat-sealable gas-pervious liquid barrier secured to one of said faces, a first panel of gas-impermeable thermoplastic material extending over said barrier and including a border portion projecting beyond the periphery of said pad, said panel having at least one central opening therethrough for the escape of gas flowing through said filter pad and being heat sealed to said barrier along a heat-seal zone extending uninterruptedly about said



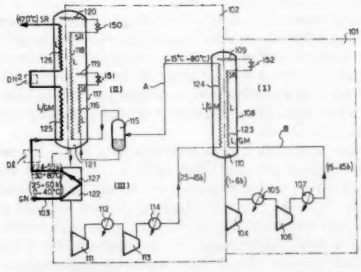
opening, said barrier being sealed by said heat seal against the transmission of gas through said zone, whereby, gas passing through said opening from the direction of said filter pad cannot by-pass said pad, and a second panel of porous material extending over the face of said pad opposite from said barrier and having a border portion projecting beyond the periphery of said pad, said border portions of said panels being sealed together to enclose said pad between said panels.

4,274,849

METHOD AND PLANT FOR LIQUEFYING A GAS WITH LOW BOILING TEMPERATURE

Christian Garier, and Henri Paradowski, both of Rueil-Malmaison, France, assignors to Campagnie Francaise d'Etudes et de Construction Technip, Paris, France

Continuation of Ser. No. 941,925, Sep. 13, 1978, abandoned, which is a continuation of Ser. No. 775,273, Mar. 7, 1977, abandoned, which is a continuation of Ser. No. 626,107, Oct. 28, 1975, abandoned. This application Aug. 21, 1979, Ser. No. 68,430
Claims priority, application France, Nov. 21, 1974, 74 38312
Int. Cl.[3] F25J *1/02*
U.S. Cl. 62—9 **45 Claims**



1. A method of liquefying a natural gas (NG) rich in methane and having a low boiling point, by means of a cold main refrigerant fluid (A) containing at least two hydrocarbons and a

substance having a boiling point substantially lower than that of methane, said main refrigerant fluid (A) being precooled by an auxiliary refrigerant fluid (B) containing at least two hydrocarbons having from 1 to 4 carbon atoms, each of said refrigerant fluids being capable of existing in a liquid and a vapor state, said method comprising the steps of:

(1) conveying under pressure a flow of said auxiliary refrigerant fluid (B) along a first closed path of travel (**101**) which is physically and thermally separated from and independent of the path of travel of said natural gas (NG), said first closed path including at least four successive sections, the first three of which are thermally separated from each other, and processing said auxiliary refrigerant fluid (B) therein by successively:

(a) in the first section (**104–106**) of said four successive sections, compressing said auxiliary refrigerant fluid (B) from a gaseous state at a low pressure to a high pressure;

(b) in the second section (**107**) of said four successive sections, precooling, with an outer coolant, said compressed auxiliary refrigerent fluid (B) to liquefy at least a part of said compressed auxiliary refrigerant fluid (B);

(c) in the third section (**123**) of said four successive sections, said third section extending inside of the fourth section (**108**) of said four successive sections, successively at least fully liquefying (at L) and subcooling (at SR) said at least partly liquefied auxiliary refrigerant fluid (B) obtained from step (1) (b) as a first confined stream in thermally independent relation to said natural gas;

(d) expanding (at **152**) said subcooled liquefied auxiliary refrigerant fluid (B) from step (1) (c), and passing said expanded auxiliary refrigerant fluid (B) through said fourth section (**109, 108**) and about said third section (**123**), thereby fully vaporizing said expanded auxiliary refrigerant fluid (B) through indirect heat exchange and in surrounding relationship with and in counter-current flow with respect to said auxiliary refrigerant fluid (B) flowing in said third section (**123**), to perform said at least full liquefaction and subcooling of said auxiliary refrigerant fluid (B) before said expansion thereof; and

(e) recycling said expanded and vaporized auxiliary refrigerant fluid (B) obtained after said heat exchange in step (1) (d) to said first section (**104–106**) for compression according to step (1) (a);

(2) conveying under pressure a flow of said main refrigerant fluid (A) along a second closed path of travel (**102**), said second closed path including at least six successive parts, the first four of which and the last of which are thermally separated from each other, and processing said main refrigerant fluid (A) therein by successively:

(a) in the first part (**111–113**) of said six successive parts, compressing said main refrigerant fluid (A) from a gaseous state at a low pressure to a high pressure;

(b) in the second part (**114**) of said six successive parts, precooling, with an outer coolant, said compressed main refrigerant fluid (A);

(c) in the third part (**124**) of said six successive parts, further precooling and partly liquefying said compressed and precooled main refrigerant fluid (A) obtained from step (2) (b) independently of said natural gas (NG); said compressed and precooled main refrigerant fluid being further precooled and partly liquefied as a first confined flow, said third part extending inside of said fourth section (**108**) of said first closed path, said precooling and partial liquefying being effected through indirect heat exchange with and in counter-current flow to said expanded and vaporized auxiliary refrigerant fluid (B) flowing in said fourth section (**108**) in surrounding relation to said third part (**124**), thereby forming a mixture of liquid and gaseous phases (L/GM) of said main refrigerant fluid (A);

(d) in the fourth part (**116, 118**) of said six successive parts, successively fully liquefying and subcooling said further precooled and partly liquefied main refrigerant fluid (A) from step (2) (c) as at least one second confined flow in said fourth part, said fourth part extending inside of the fifth part (**117**) of said six successive parts;

(e) expanding to a lower pressure and (at **150, 120, 151, 119**) said subcooled liquefied main refrigerant fluid (A) from each second confined flow (**118, 116**) and passing said expanded main refrigerant fluid (A) through the fifth part (**117**) of said six successive parts and about said fourth part (**118, 116**) thereby fully vaporizing said expanded main refrigerant fluid (A) through indirect heat exchange with and in counter-current flow with respect to said main refrigerant fluid (A) flowing in said fourth part (**118, 116**), and in surrounding relationship therewith, to perform said full liquefaction and subcooling of said main refrigerant fluid (A) obtained according to step (2) (d) before said expansion thereof;

(f) in the sixth part (**122**) of said six successive parts, heating said expanded and vaporized main refrigerant fluid (A) obtained after step (2) (e) in thermally independent relation to said auxiliary refrigerant fluid (B) and to steps (2) (d) and (2) (e); and

(g) recycling said heated vaporized main refrigerant fluid (A) from step (2) (f) to said first part (**111–113**) for compression according to step (2) (a);

(3) conveying a continuous flow of said natural gas (NG) under pressure along an open path of travel (**103**) consisting of at least two successive portions and processing it by successively:

(a) precooling at least a part of said natural gas (NG) as a confined stream in the first portion (**127**) extending inside of said sixth part (**122**) of flow of said main refrigerant (A) through indirect heat exchange with said expanded and vaporized main refrigerant fluid (A) flowing in said sixth part (**122**) in surrounding relationship with said first portion (**127**), in thermally independent relation to steps (2) (d) and (2) (e);

(b) successively partially and then fully liquefying and subsequently subcooling said precooled natural gas (NG) from step (3) (a) as a confined stream in the second portion (**125, 126**) of said two successive portions, said second portion extending inside of said fifth part (**117**) of flow of said main refrigerant (A), through indirect heat exchange with at least said expanded and fully vaporized main refrigerant fluid (A) flowing through said fifth part (**117**) and about said second portion (**125, 126**) in counter-current relationship with said precooled natural gas (NG) and in thermally independent relation to said auxiliary refrigerant fluid (B); and

(c) recovering said thus liquefied subcooled natural gas (NG) from said second portion (**126**).

4,274,850

RECTIFICATION OF NATURAL GAS

Hans Becker, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,262

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849344

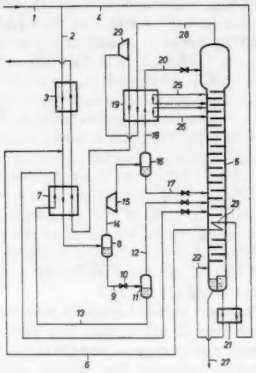
Int. Cl.[3] **F25J** *3/02*

U.S. Cl. 62—24 **7 Claims**

1. In a process for separating a C_{2+}-hydrocarbon fraction from the compressed natural gas by rectification, wherein the compressed natural gas is, prior to rectification, subjected to partial condensation and engine-expansion steps to achieve the desired pressure and temperature conditions in the rectification column and wherein said column is fed by resultant condensate of natural gas, the improvement comprising:

recovering a fluid from the engine expansion step; phase separating said fluid to obtain a liquefied fraction and an unliquefied gaseous fraction, passing said unliquefied gaseous fraction in indirect heat exchange relationship with engine-expanded overhead product from said column, whereby peak cooling and partial condensation of said

fraction is achieved, feeding resultant partially condensed unliquefied gaseous fraction to the top of said column, and



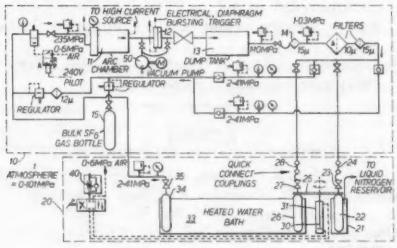
passing said liquefied fraction from the phase separation step to an intermediate point of said column.

4,274,851

GAS RECOVERY OF SULPHUR HEXAFLUORIDE

Anthony D. Stokes, Sydney, Australia, assignor to The University of Sydney, Sydney, Australia

Filed Mar. 28, 1979, Ser. No. 25,322
Int. Cl.³ F25J *3/08*
U.S. Cl. 62—40 **8 Claims**



1. A gas recovery apparatus for recovering sulphur hexafluoride gas from the switching chamber of a high voltage circuit breaker, said recovery apparatus comprising:

a first high pressure gas supply line interconnecting the switching chamber with a quick-connect gas coupling;

a gas storage vessel having a closure valve connectable to the quick-connect gas coupling;

cryogenic means to reduce the temperature of the gas storage vessel below the phase transition temperatures of the sulphur hexafluoride gas in the range of pressures from the switching chamber pressure of the gas to almost pure vacuum pressure under cryopumping conditions set up upon opening of the closure valve, said cryogenic means including a dewar flask containing liquid nitrogen at atmospheric pressure;

means to ensure said closure valve and the inlet to the gas storage vessel are both maintained at another temperature which is always in excess of said phase transition temperatures;

a heating station for heating the stored gas in the gas storage vessel;

means to effect recharging of the switching chamber with stored gas from the heated storage vessel in the heating station via a second highpressure line, and,

means to interchange the gas storage vessel between the cryogenic means and the heating station, the interchange means including a carrier supporting the gas storage vessel and means actuable to lift the carrier and hence raise the vessel from the cryogenic means or the heating station and to generate movement of the carrier in order to effect the interchange.

4,274,852

MANUFACTURING GLASS WITH A BUSHING HAVING A DIRECTIONALLY ALIGNED DISPERSION STRENGTHENED TIP PLATE

Dennis L. McGarry, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 17, 1979, Ser. No. 67,590
Int. Cl.³ C03B *37/02*; B22F *3/20*
U.S. Cl. 65—2 **8 Claims**

1. In a fibrous glass manufacturing process comprising maintaining a pool of molten glass in a glass feeder having a foraminous bottom plate with a transverse axis shorter than a longitudinal axis thereof, and attenuating a glass stream issuing from said foraminous bottom plate into a glass fiber, said plate being formed of a dispersion strengthened precious metal, or alloy thereof, the improvement wherein said dispersion strengthened plate has a smaller creep rate along its transverse axis than its longitudinal axis.

4,274,853

METHOD AND APPARATUS FOR THE PRODUCTION OF GLASS FIBERS

Terry J. Hanna, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

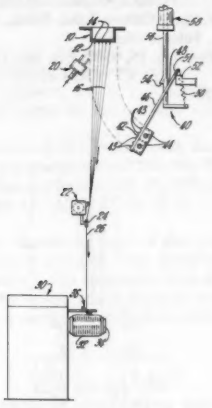
Filed Oct. 22, 1979, Ser. No. 86,897
Int. Cl.³ C03B *37/02*
U.S. Cl. 65—2 **12 Claims**

1. A method of glass fiber production from a bushing of the type having an orifice plate with a plurality of closely-spaced orifices and a flat exterior surface comprising:

a. moving a plate member into spaced-apart relationship immediately below the orifice plate of the bushing, the plate member being substantially parallel to and below the entire orifice area of the orifice plate;

b. flowing heat-softened glass through the orifice plate to form a body of heat-softened glass between the plate

member and the orifice plate and in engaging contact with the plate member; and



c. moving the plate member with the engaged body of glass from the orifice plate at a rate effective to form fibers.

4,274,854

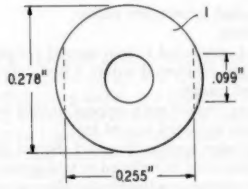
POLARIZATION-PRESERVING OPTICAL FIBER

William Pleibel, Matawan, and Rogers H. Stolen, Rumson, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 869,365, Jan. 13, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,699

Int. Cl.³ C03B *37/00;* C03C *25/02*

U.S. Cl. 65—2 **14 Claims**



1. A method of making an optical fiber comprising the steps of:

fabricating a substrate tube having a wall with an outer surface and an inner surface of predetermined shape, the distance between said outer surface and said inner surface being the thickness of said wall,

depositing at least one cladding layer on the interior of said substrate tube by a vapor deposition process.

depositing a core layer on the interior of said at least one cladding layer by a vapor deposition process,

radially collapsing said substrate tube by a heating process to form an optical preform, and

drawing an optical fiber from said preform,

characterized in that said step of fabricating causes the thickness of the wall of said substrate tube to be substantially nonuniform in thickness, said nonuniformity in thickness being arranged about said wall so that maxima and minima of said thickness lie in planes which are substantially orthogonal, whereby said steps of collapsing said substrate tube and drawing an optical fiber from said preform form a polarization-preserving optical fiber.

4,274,855

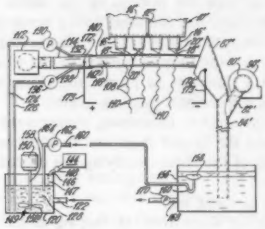
METHOD AND APPARATUS FOR FORMING AND TREATING KINKY FIBERS FROM GLASS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 21, 1980, Ser. No. 114,030

Int. Cl.³ C03B *37/02;* C03C *25/02*

U.S. Cl. 65—2 **14 Claims**



1. The method of forming fibers of heat-softened glass including flowing streams of glass in a row from a feeder, attenuating the streams of glass to fibers, impinging a coherent stream of liquid against the glass streams to effect successive distortions of the glass streams, conveying current-conducting material in particulate form in the stream of liquid, establishing electrical potential in the stream of liquid whereby the potential causes micro arcing between adjacent current-conducting particles to effect a modification of the surfaces of the attenuated fibers, and cooling the glass streams at the distortions by the stream of liquid to form successive permanent bends in the attenuated fibers.

4,274,856

METHOD FOR DEVELOPING A RELEASE SURFACE ON A GLASS MOLD

William I. Frey, Curtisville, and William R. Beestrice, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 31, 1979, Ser. No. 108,931

Int. Cl.³ C03B *23/023*

U.S. Cl. 65—24 **6 Claims**

1. A method for producing a non-transferring release surface on a glass substrate comprising the steps of:

a. treating a glass substrate with a combination of methylchlorosilane and water vapor for a sufficient time to form a film on the glass surface, wherein said film comprises an oily residue; and

b. cleaning the treated surface with a polar solvent to remove said residue.

4,274,857

TREATING COVERS FOR PRESS BENDING MOLDS, AND METHOD OF PRESS BENDING GLASS SHEETS

Terry L. Wolfe, Tyrone, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 90,727

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—26 **8 Claims**

1. An apparatus for shaping a glass sheet having a portion of at least one surface painted wherein the apparatus is of the type having at least one shaping mold having a shaped surface; a cover of flexible fiber fabric on the shaping surface of the at least one shaping mold, the cloth having a normal dimensional yielding ability and means for transferring the sheet to the at least one shaping mold, the improvement comprising:

at least the portion of the fabric expected to contact the painted portion of the sheet coated with a boron nitride composition with a thickness sufficient to prevent transfer

of the paint from the painted portion of the sheet to the cover and at a thickness to permit the cloth to maintain its normal dimensional yielding ability.

4. A method of shaping a glass sheet having a portion of at least one surface painted, comprising the steps of:

providing at least one shaping mold having a flexible fiber fabric over the shaping surface, the fabric having a normal dimensional yielding ability;

coating at least the portion of the fabric to contact the painted portion of the sheet with a boron nitride composition with a thickness sufficient to prevent transfer of the paint from the painted portion of the sheet to the fabric and at a thickness to permit the fabric to maintain the normal dimensional yielding ability;

heating the sheet to its shaping temperature;

positioning the heated sheet on the fabric with the painted portion of the sheet overlying the coated portion of the fabric;

shaping the sheet; and

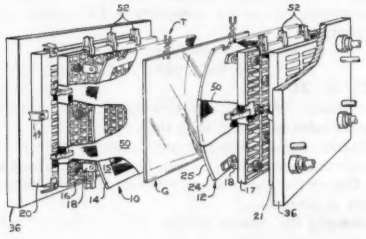
removing the sheet from the shaping mold.

4,274,858

MOLDS FOR PRESS BENDING GLASS SHEETS

George R. Claassen, New Kensington, and Raymond J. Mickelic, Springdale, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 115,965
Int. Cl.³ C03B *23/03*
U.S. Cl. 65—273 **7 Claims**



1. Apparatus for press bending a heat-softened glass sheet by pressurized engagement thereagainst comprising:

1. a metal member deformable in the direction of its thickness and having a shaping surface whose shape approximates that of the shape desired for the glass sheet after bending and having sufficient rigidity to resist deformation during pressurized engagement against a heat-softened glass sheet,

2. a relatively rigid member more rigid that said metal member located in spaced relation behind and in facing relation to said metal plate, and comprising a grate with a plurality of elongated openings therein,

3. adjustable attachment means distributed in spaced relation throughout the area of said deformable member and said relatively rigid member by which the shape of said deformable member may be altered, and

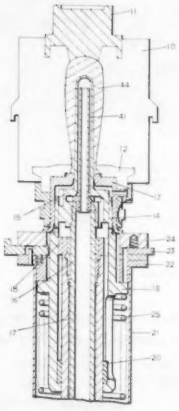
4. an organic thermosetting adhesive bonding said adjustable attachment means to the rear surface of said deformable metal member.

4,274,859

PLUNGER OPERATING MECHANISM FOR A GLASS FORMING MACHINE

Eustace H. Mumford, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 19, 1980, Ser. No. 122,409
Int. Cl.³ C03B *11/16*
U.S. Cl. 65—314 **9 Claims**



1. Apparatus for pressing mold charges into parisons wherein the mold charge is delivered to a parison and a baffle is seated on the upper end of the mold and a neck ring carried at the lower end of the mold with a coaxially positioned plunger supported for axial movement through said neck ring into the interior of the parison mold by operation of a reciprocating motor, the improvement in the plunger operating motor comprising:

a first piston;

a rod connected to said first piston;

a second piston;

a hollow rod connected to said second piston;

said first piston positioned within a first cylinder formed in said second piston;

said rod being coaxial with respect to said hollow rod and said plunger mounted to said rod;

a second cylinder surrounding said second piston whereby high pressure fluid introduced to said second cylinder will move both pistons resulting in the plunger moving into the mold charge with a lower force.

4,274,860

METHOD FOR STIMULATING GROWTH IN FOLIAGE PLANTS

William C. Firth, Jr., Robbinsville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 924,146, Jul. 13, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,794
Int. Cl.³ C05F *11/02*
U.S. Cl. 71—24 **4 Claims**

1. A method of stimulating the growth of foliage plants selected from those of the group consisting of Calethea, Chamaedorea and Philodendron, which comprises; potting the plants in a conventional foliage plant potting media which includes as an active ingredient from 0.1 to 10 percent by volume of the potting media, of a humate, said humate being characterized in part by a carbon to hydrogen ratio (weight to weight) of from 9.5–17.5:1.0, a carbon to oxygen ratio of 1.0–2.0:1.0; an aluminum content of 2.8 to 8.4 percent by weight; a titanium content of 0.5 to 1.5 percent by weight and a calcium content of less than 0.5 percent by weight provided that when the plant selected is Calethea, the percentage of

active ingredient is within the range of 1.5 to 10.0 percent and when the plant selected is Chamaedorea, the percentage of active ingredient is within the range of 0.1 to 5 percent and when the plant selected is Philodendron, the percentage of active ingredient is within the range of 0.1 to 10 percent.

4,274,861

PLANT GROWTH STIMULANT

Alan Henderson, Glendora, and L. E. Chamblee, Greenwood, both of Miss., assignors to Inter Chem, Ltd., Greenwood, Miss.

Continuation-in-part of Ser. No. 919,483, Jun. 27, 1978, abandoned, which is a continuation of Ser. No. 737,484, Nov. 1, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,672

Int. Cl.³ A01N *37/38, 31/02*

U.S. Cl. 71—117 **13 Claims**

1. A method for increasing stage of the growth cycle an aqueous composition comprising from about 60 to about 120 ppm by weight active 2,4-D Herbicide, from about 10,000 to about 80,000 ppm by weight lower aliphatic alcohol, a surfactant and an adhering agent each in amounts of from about 10 to about 10,000 ppm.

4,274,862

N-DIMETHYLBENZYLACETAMIDE DERIVATIVES, AND THEIR PRODUCTION AND USE

Osamu Kirino, Ashiya; Shunichi Hashimoto, Toyonaka; Hiroshi Matsumoto, Takarazuka, and Hiromichi Oshio, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

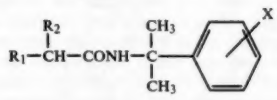
Filed Nov. 7, 1979, Ser. No. 91,871

Claims priority, application Japan, Nov. 13, 1978, 53-140071; Nov. 15, 1978, 53-141412

Int. Cl.³ C07C *103/737, 103/375, 103/38;* **A01N** *9/20*

U.S. Cl. 71—118 **14 Claims**

1. A compound of the formula:



wherein X is a hydrogen atom, a methyl group, a methoxy group or a chlorine atom, R_1 is a C_2–C_7 alkyl group or a C_5–C_7 cycloalkyl group and R_2 is a hydrogen atom, a halogen atom, a C_1–C_4 alkyl group or a methoxy group, or when R_1 and R_2 are taken together, they represent a C_4–C_6 alkylene group, provided that when R_1 is a tertiary alkyl group, R_2 does not represent a halogen atom.

14. A method for controlling weeds which comprises contacting the weeds with a herbicidally effective amount of at least one of the N-dimethylbenzylacetamide derivatives according to claim 1.

4,274,863

METHOD OF TREATING POLLUTANT-LADEN GASES, ESPECIALLY FROM A STEEL-MAKING OR COKING PLANT

Paul Metz, Luxembourg, Luxembourg, assignor to Arbed S.A., Luxembourg, Luxembourg

Filed Dec. 22, 1978, Ser. No. 972,348

Claims priority, application Luxembourg, Dec. 30, 1977, 78800

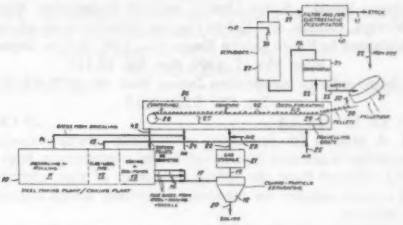
Int. Cl.³ C22B *1/20*

U.S. Cl. 75—5 **6 Claims**

1. A method of treating pollutant-laden gases from a metallurgical plant which produces a number of such gases of different compositions, said method comprising the steps of:

(a) transporting all of said gases from said plant to a central cleaning station;

(b) passing the gases at said central cleaning station in admixture in at least one stream through an incandescent mineral bed in the form of a sintered cake of an ore-sintering plant whose combustion air is at least partly replaced by at least some of the pollutant-laden gases from said metallurgical plant;



(c) obtaining gases after passage through said bed and subjecting the obtained gases to a supplementary cleaning in a further gas-cleaning station forming part of said sintering plant; and

(d) condensing water from gases derived from said bed and using the condensed water as a moisturizer for a mixer or pelletizer of the sintering plant.

4,274,864

MAKING IRON POWDER

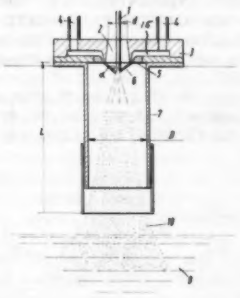
Dieter Bernhardt, Düsseldorf; Norbert Dautzenberg, Wegberg; Richard Lummer, Jüchen, and Georg Huber, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 7, 1979, Ser. No. 10,146

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806716

Int. Cl.³ B22F *1/04*

U.S. Cl. 75—0.5 R **6 Claims**



1. Method of making an iron powder of high compressibility and low bulk density by means of atomizing a stream of molten steel, comprising the steps of:

providing a conical jet of water at a water pressure prior to jet formation in excess of 80 bars and at a rate in excess of 10 cubic meters water per metric ton of steel, the cone of the jet having an angle so that the water impinges upon the stream at an angle between 40° and 60°;

providing air suction in a region upstream from the cone, adjacent to the stream at a pressure of 0.02 to 0.20 bars below ambient;

annealing the powder in a reducing atmosphere at a temperature from 1,000° C. to 1,200° C.; and

breaking a resulting cake to obtain a powder having a particle size distribution with a higher content of larger parti-

cles than the powder immediately resulting from the atomization.

4,274,865

PRODUCTION OF MAGNETIC POWDER

Shintaro Suzuki; Sadao Iizuka, both of Shibukawa; Yoshimi Moriya, Gunma, and Yuichi Omote, Shibukawa, all of Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,115

Claims priority, application Japan, Mar. 16, 1978, 53/30150

Int. Cl.[3] B22F 9/18

U.S. Cl. 75—0.5 AA 20 Claims

1. A process for producing a magnetic powder consisting essentially of acicular iron powders and containing at least one metal selected from the group consisting of zinc, chromium and copper suitable for magnetic recording which comprises the steps of

(a) treating a finely divided starting material selected from the group consisting of (i) iron oxyhydroxide, (ii) iron oxyhydroxide containing a doping component selected from Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof, (iii) iron oxides and (iv) iron oxides containing a doping component selected from Co, Mn, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof, with an aqueous (i) solution or (ii) suspension of an applied metal compound selected from the group consisting of zinc, chromium and copper compounds and mixtures thereof or a mixture of said aqueous solution and said aqueous suspension so that said applied metal compound is applied to said starting material,

(b) filtering the thus treated material off the liquid medium to form a cake and drying said cake, and

(c) reducing said dry cake in a reducing gas stream at a temperature up to about 600° C. to form an acicular magnetic powder consisting essentially of iron and said applied metal selected from the group consisting of zinc, chromium and copper and mixtures thereof.

4,274,866

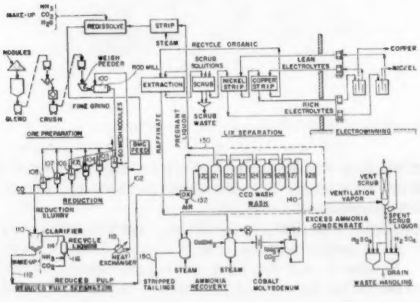
FLOTATION AND SINTERING OF SYNTHETIC MANGANESE CARBONATE

Ralph W. M. Lai, Lexington, Mass., and Edwin L. Owen, San Antonio, Tex., assignors to Kennecott Copper Corporation, New York, N.Y.

Continuation of Ser. No. 927,273, Jul. 24, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,077

Int. Cl.[3] B03D 1/02; C22B 1/16

U.S. Cl. 75—5 6 Claims



1. A process for recovering a ferromanganese product from manganese nodules comprising the following steps:

a. reducing the manganese oxides in the nodules to enable non-manganese and non-iron metal values to be leached;

b. leaching non-manganese and non-iron metal values;

c. reacting the manganese to form a crystalline manganese carbonate phase which is distinct from a remaining phase;

d. froth floating the crystalline manganese carbonate phase and the remaining phase in a froth flotation cell to separate the crystalline manganese carbonate from the remaining phase, said froth flotation being performed in the presence of a fatty acid as a collector and sodium silicate as a dispersant, at a temperature between the range of 55°–80° C. and at a pH of 6.6 to 8.4;

e. withdrawing the crystalline manganese carbonate from the top of the flotation cell to collect a manganese concentrate; and

f. sintering the manganese concentrate to produce a ferromanganese product.

4,274,867

METHOD FOR PRODUCING LOW-CARBON STEEL FROM IRON ORES CONTAINING VANADIUM AND/OR TITANIUM

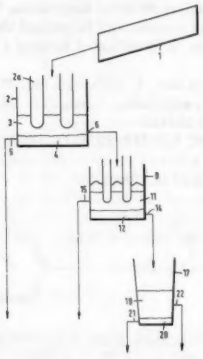
Friedrich Bardenheuer, Krefeld; Horst Konig, Duisburg; Alois Junker, Dusseldorf, and Gero Rath, Mulheim, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 4, 1979, Ser. No. 72,186

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847403

Int. Cl.[3] C21C 5/52

U.S. Cl. 75—13 6 Claims



1. A method of producing low carbon steel having a relatively high vanadium concentration from iron ore containing vanadium, comprising the steps of:

(a) pre-reducing said iron ore in a pre-reduction oven;

(b) lining an electro-slag resistance furnace with a refractory material selected according to the desired composition of the molten slag layer;

(c) charging said pre-reduced iron ore together with carbon carriers, the quantity of said carbon carriers being only slightly in excess of the stoichiometric quantity required to reduce said iron ore into said electro-slag resistance furnace;

(d) smelting said pre-reduced iron ore and carbon carriers in said electro-slag resistance furnace to produce steel having a relatively low vanadium concentration and a slag layer containing both vanadium and a relatively low concentration of iron oxides;

(e) tapping said steel from said electro-slag resistance furnace;

(f) separately tapping said slag layer from said electro-slag resistance furnace;

(g) charging said tapped slag layer into an electro-reduction furnace; and

(h) processing said tapped slag layer in said electro-reduction furnace into smelted crude iron having a relatively high vanadium concentration.

4,274,868

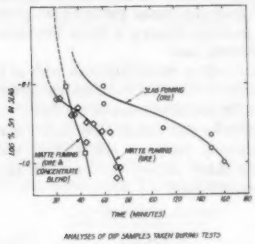
RECOVERY OF TIN FROM ORES OR OTHER MATERIALS

William T. Denholm, Camberwell, and Kevin A. Foo, Carnegie, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Aberfoyle Services Pty. Ltd., both of, Australia

Continuation-in-part of Ser. No. 841,388, Oct. 12, 1977, abandoned. This application Aug. 9, 1979, Ser. No. 65,274

Int. Cl.³ C01G *19/00, 19/02*

U.S. Cl. 75—21 12 Claims



ANALYSES OF DIP SAMPLES TAKEN DURING TESTS

1. A process for extracting tin values from a tin bearing iron sulphide ore containing silica, comprising charging said ore in particulate form into a refractory-lined reactor containing a pool of molten matte under temperature conditions such that said iron sulphides in said ore become molten and enter the matte pool, blowing oxidizing gas through the matte pool to oxidize said added iron sulphides thus producing iron oxide and generating the heat and gases required to smelt the charge and drive off the tin values from the charge in the form of volatile sulphides and oxides, said iron oxide combining with silica in the charge to form a layer of molten slag which floats on the matte bath, the conditions in the reacting mass being such that the oxidizing gas blown into the reactor always comes first into contact with the bottom pool of molten matte, the pool of molten matte being maintained in the reactor to act as a chemical buffer to stabilize the oxygen and sulphur partial pressures of said gases in a suitable range to sulphidize and volatilize the tin in the charge, withdrawing and collecting the volatilized tin values and withdrawing tin-depleted slag from the reactor.

4,274,869

DESULPHURIZATION OF METALS

Jan O. Kristiansen, Olmsted Falls, and C. Richard Lynham, Medina, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Apr. 21, 1980, Ser. No. 141,816

Claims priority, application United Kingdom, Apr. 19, 1979, 13616/79

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—53 20 Claims

1. A method of desulphurising a molten ferrous metal selected from the group consisting of steel and iron comprising treating the molten metal with a composition in compacted form comprising lime, a metal fluoride selected from the group consisting of alkali metal and alkaline earth metal fluorides, and ballmill dust.

4,274,870

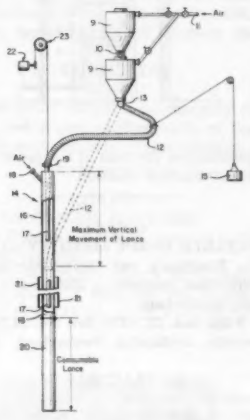
SMELTING OF COPPER CONCENTRATES BY OXYGEN INJECTION IN CONVENTIONAL REVERBERATORY FURNACES

John C. Yannopoulos, Danbury, Conn., assignor to Newmont Exploration Limited, Danbury, Conn.

Filed Apr. 25, 1979, Ser. No. 33,208

Int. Cl.³ C22B *15/00*

U.S. Cl. 75—73 9 Claims



1. A process for the production of copper matte from finely-divided sulfidic iron-bearing copper concentrates by smelting in a conventional reverberatory furnace, for increasing the thermal efficiency of such furnace and for increasing the concentration of sulfur dioxide in the gas emanating from such furnace, which comprises establishing a molten cupriferous bath in such furnace, disposing a plurality of consumable lances vertically through the furnace roof adjacent the end of the furnace opposite the flue, the discharge end of each lance being positioned adjacent the surface of the molten bath, and wherein each lance is mounted for downward movement at substantially the rate at which its lower end is consumed in consequence of its proximity to the molten bath, and for retraction to above the furnace roof for repair when its lower end has been consumed, projecting a stream of said concentrates admixed with slag-forming agents together with a current of substantially pure oxygen through said lances with sufficient force to agitate the bath, whereby said concentrates are smelted to form matte and slag in the bath, maintaining the molten bath relatively quiescent in that portion of the furnace adjacent the flue, and withdrawing matte and slag separately from the bath where it is relatively quiescent.

4,274,871

METHOD OF OBTAINING MANGANESE ALLOYS WITH A MEDIUM CARBON CONTENT

Michel Demange, and Louis Septier, both of Le Fayet, France, assignors to Societe Francaise d'Electrometallurgie-Sofrem, Paris, France

Filed Dec. 31, 1979, Ser. No. 108,844

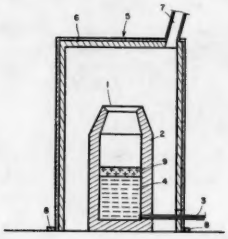
Claims priority, application France, Jan. 22, 1979, 79 02574

Int. Cl.³ C22B *47/00*

U.S. Cl. 75—134 M 14 Claims

1. A method of obtaining alloys based on manganese having a medium carbon content of from 0.5 to 2% by decarburization with a minimum loss of manganese, comprising decarburizing a bath of liquid ferro-manganese, containing from 3 to 8% of carbon and 0 to 7% of silicon, by the action of an oxidizing

agent in a reactor, characterized in that the oxidizing agent is introduced in the lower part of the bath of liquid ferro-manganese and maintaining the bath at a pressure above 1.5 bars during the decarburization reaction.



4,274,872

BRAZABLE SHAPE MEMORY ALLOYS

Keith Melton, Busslingen, and Olivier Mercier, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Baden, Switzerland

Filed Jun. 25, 1979, Ser. No. 51,747

Claims priority, application Switzerland, Aug. 10, 1978, 8508/78

Int. Cl.³ C22C *9/04*

U.S. Cl. 75—157.5 **2 Claims**

1. A brazable shape memory alloy of the β-brass type comprising a mixture of copper, zinc, aluminum and nickel wherein said alloy comprises about 0.5 to about 4 wt. % nickel, 6 to 15 wt. % aluminum, 1 to 25 wt. % zinc and 65 to 85 wt. % copper; and wherein the total amount of aluminum and zinc is greater than or equal to 15 wt. % and less than or equal to 31 wt. %.

4,274,873

DISPERSION STRENGTHENED METALS

Anil V. Nadkarni, Mentor, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,554

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—211 **10 Claims**

1. In a process for dispersion strengthening metal including the steps of providing atomized powdered metal alloy of a relatively noble matrix metal and a solute metal, the matrix metal having a relatively low negative free energy of oxide formation and the solute metal having a relatively high negative free energy of oxide formation, and the step of internally oxidizing said powdered alloy, the improvement comprising:

providing atomized alloy metal particles having a particle size up to about 1000 microns to provide a first fraction of alloy metal particles between about 37 and 180 microns and a second fraction of oversize alloy metal particles larger than about 180 microns;

separating the second fraction of oversize alloy metal particles from the first fraction of alloy metal particles;

flattening said oversize metal particles to provide flaked alloy metal particles having a flake thickness less than about 180 microns;

mixing said flaked alloy metal particles with at least a portion of said first fraction of atomized alloy metal particles to provide a powdered alloy metal mixture of the first fraction atomized alloy particles and flaked alloy metal particles, said mixture containing by weight between about 20% and 80% of said flaked alloy metal particles;

consolidating said internally oxidized alloy metal mixture to provide a dispersion strengthened metal product.

10. The process for dispersion strengthening metal including the steps of providing atomized powdered metal alloy of a relatively noble matrix metal and a solute metal, the matrix metal having a negative free energy of oxide formation at 25° C. of up to 70 kilocalories per gram atom of oxygen, said solute metal having a negative free energy of oxide formation exceeding the negative free energy of oxide formation of said matrix metal by at least about 60 kilocalories per gram atom of oxygen at 25° C., the improvement comprising:

providing alloy metal particles having a particle size up to about 1000 microns to provide a first fraction of alloy metal particles less than about 180 microns and a second fraction of oversize alloy metal particles larger than about 180 microns;

separating the second fraction of oversize alloy metal particles from the first fraction of alloy metal particles;

flattening said oversize metal particles to provide flaked alloy metal particles having a flake thickness less than about 180 microns; and

mixing said flaked alloy metal particles with at least a portion of said first fraction of alloy metal particles to provide a powdered alloy metal mixture of the first fraction atomized alloy particles and flaked alloy metal particles, said mixture containing between about 20% and 80% by weight of said flaked alloy metal particles adapted to be dispersion strengthened.

4,274,874

COPPER-TIN TYPE SINTERED ALLOY FOR OIL-IMPREGNATED BEARING EXCELLENT IN BEARING PERFORMANCE AS BEARING USED IN LOW-LOAD AND HIGH-VELOCITY REGION

Kunio Obara; Tohru Kohno, both of Urawa, and Hiroshi Sawaguchi, Ageo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1979, Ser. No. 77,579

Int. Cl.³ B22F *5/00*

U.S. Cl. 75—231 **3 Claims**

1. A copper-tin type sintered alloy for an oil-impregnated bearing excellent in bearing performance particularly as a bearing used in low-load and high-velocity region, having a chemical composition consisting of, in weight percentage:

Tin	from 8 to 11%;
Phosphorus	from 0.2 to 1.7%;

at least one solid lubricant, having an average particle size of from 20 to 80 μm, selected from the group consisting of:

Molybdenum disulfide	from 1.1 to 11%,

-continued

and	
Tungsten disulfide	from 1.7 to 17%,

where,

the total amount of molybdenum disulfide and tungsten disulfide being up to 17%;

and

the balance copper and incidental impurities; and

said sintered alloy being prepared by sintering a green compact having said chemical composition at a temperature of from 650° to 750° C. for 10 to 30 minutes.

4,274,875

POWDER METALLURGY PROCESS AND PRODUCT

Terence M. Cadle, Coventry, and Martyn S. Lane, Nuneaton, both of England, assignors to Brico Engineering Limited, Coventry, Great Britain

Filed Jul. 19, 1978, Ser. No. 926,038

Claims priority, application United Kingdom, Jul. 20, 1977, 30361/77

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—232 **4 Claims**

1. A sintered iron-based metal product suitable for use in wear-resistant applications, and produced by a process comprising:

(a) selecting an iron-based metal powder;

(b) adding powdered mica to the metal powder;

(c) mixing the metal powder and the mica powder;

(d) compacting the resulting mixture; and

(e) sintering the compacted powder.

4,274,876

SINTERED HARD METALS HAVING HIGH WEAR RESISTANCE

Yujiro Kodama; Nobuhito Kuroishi; Masato Sabao, and Yasumasa Kureha, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Feb. 26, 1979, Ser. No. 15,178

Claims priority, application Japan, Mar. 8, 1978, 53-27123

Int. Cl.³ B22F *5/00*

U.S. Cl. 75—243 **4 Claims**

1. Sintered hard metals having high wear resistance and consisting essentially of Ni: 0.5–10%, Cr: 0.2–5%, Mo: 4–12% and C: 0.7–2.0%, each by weight, the remainder being iron.

4,274,877

METAL POWDERS

Owen N. Collier, and Stephen J. Hackett, both of Reading, England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation-in-part of Ser. No. 702,727, Jul. 6, 1976, Pat. No. 4,130,506. This application Nov. 20, 1978, Ser. No. 962,790

Claims priority, application United Kingdom, Jul. 4, 1975, 28264/75

Int. Cl.³ B22F *1/02*

U.S. Cl. 75—252 **5 Claims**

1. A metal refractory composite powder suitable for use at high temperatures comprises an intimate mixture, other than a mere physical admixture, of particles of platinum, palladium, rhodium, ruthenium, iridium, osmium, gold or silver, or an alloy containing one or more of said metals, and particles of a refractory material, the particles of refractory material being positively charged over at least a portion of the surface thereof, the refractory material being naturally-occurring and being selected from the group consisting of clays, silica, alumina, titania, zirconia, bentonite, boehmite and sol-gel or mixtures thereof; the particle size of the metal component of the powder having a size falling within the range 0.2 to 2.0 microns and the percentage by weight of the refractory material in the powder being within the range 10 to 25%.

4,274,878

SULPHIDE PELLET MATERIALS

James A. Charles, Stapleford, England, assignor to Metallurgical Processes Limited and I.S.C. Smelting, both of, The Bahamas

Division of Ser. No. 54,872, Jul. 5, 1979, Pat. No. 4,231,791. This application May 12, 1980, Ser. No. 148,958

Claims priority, application United Kingdom, Jul. 5, 1978, 28729/78

Int. Cl.³ B22F *1/02*

U.S. Cl. 75—256 **3 Claims**

1. A composite pellet which is substantially spherical in shape and has a central core predominantly of lead sulphide and an outer shell predominantly of zinc sulphide.

4,274,879

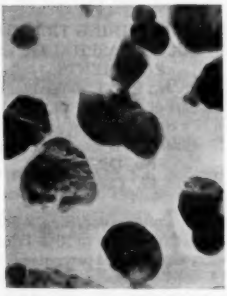
SYNTHETIC BONE ASH

George D. Irvine, Greenock, Scotland, assignor to Tate & Lyle Limited, London, England

Continuation of Ser. No. 16,951, Mar. 5, 1979, abandoned. This application Jun. 3, 1980, Ser. No. 156,052

Int. Cl.³ C01B *15/16, 25/26;* C04B *35/00*

U.S. Cl. 106—39.5 **13 Claims**



1. A process for producing a hydroxyapatite which has less than 5% by weight content of orthophosphates which comprises contacting a stream of a slurry of hydrated lime with a stream of at least about 60% by weight phosphoric acid at an approximately stoichiometric ratio of 10 $Ca(OH)_2$ to 6 H_3PO_4 at a temperature of from about 80° to about 85° C. at a controlled substantially constant reaction mixture pH value which is in the range of from about 9.0 to about 11.0 by continuously introducing said streams into and withdrawing the resulting mixture from a reaction zone wherein the precipitated particulate hydroxyapatite resulting from said contacting is separated from said reactants and wherein the residence time in said reaction zone is up to 90 minutes.

4,274,880

TREATMENT OF HAZARDOUS WASTE

Christopher L. Chappell, Lichfield, England, assignor to Stablex A.G., Zug, Switzerland

Filed Oct. 30, 1979, Ser. No. 89,410

Claims priority, application United Kingdom, Nov. 8, 1978, 43654/78

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **8 Claims**

1. A method of treating an oily waste which is immiscible with water characterised by the step of mixing the oily waste with a solid substance capable of absorbing or adsorbing oil and a liquid hazardous waste capable of being contained in an

aqueous slurry and by the step of adding to the mixture a calcium-containing cement and aluminium silicate and/or an alumino-silicate thereby forming a flowable slurry which sets into a detoxified rock-like mass.

4,274,881

HIGH TEMPERATURE CEMENT

Christine A. Langton, 523 S. Atherton St., and Della M. Roy, 528 S. Pugh St., both of State College, Pa. 16801

Filed Jan. 14, 1980, Ser. No. 111,644

Int. Cl.³ C04B 7/02

U.S. Cl. 106—98 **16 Claims**

1. A high temperature, curable cement suitable for use in deep wells comprising:

serpentine which has been calcined sufficiently to form an aggregate reactive in the presence of calcium silicate and silica under hydrothermal curing conditions, said reactive matter comprising at least one of forsterite, enstatite or amorphous material;

fine grain silica of less than about 50 μm particle size; and at least one of dicalcium or tricalcium silicate

wherein said calcined serpentine, silica and silicate are present in amounts sufficient to form a hydrothermally crystallized diopside phase when said cement is cured at a temperature of 120° to 440° C. and a pressure of 30 to 30,000 psi for at least one day, said cement containing no more than 2% asbestos fibers.

4,274,882

FORMULATION CONTAINING TRINIDAD ASPHALT FOR MORE DUCTILE ASPHALTIC CONCRETE PAVEMENTS

LeRoy H. McAllister, Jr., R.R. 1, Zionsville, Ind. 46077

Continuation-in-part of Ser. No. 974,359, Dec. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 718,892, Aug. 30, 1976, abandoned. This application Apr. 9, 1980, Ser. No. 138,595

Int. Cl.³ C08L 95/00

U.S. Cl. 106—280 **17 Claims**

1. An asphaltic concrete, comprising a blended Trinidad asphalt cement, formed from 10% to 50% Trinidad asphalt and 50% to 90% refinery asphalt, said percentages being by weight of the resulting blended Trinidad asphalt cement, in combination with an aggregate mixture selected from one of the following, the total mixture being prepared at a temperature above 212° F., and the blended Trinidad asphalt cement being used in a weight percentage of from 4.0% to 8.0% of the pavement mixture:

Aggregate Sieve Size (Passing)	Type I	Type II
Passing ¾"	100	
Passing ½"	98–100	100
Passing ⅜"		98–100
No. 8 (Retained on)	40–60	30–50
Passing 200 mesh	3–8	3–9.

4,274,883

AQUEOUS DISPERSION OF A HYDROPHOBIC SILICA

Gerd Lumbeck, Hanau, and Horst Ferch, Bruchkobel, both of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 76,723

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844052

Int. Cl.³ C09C 3/12

U.S. Cl. 106—308 Q **8 Claims**

1. An aqueous dispersion consisting essentially of 0.1 to 50 parts of hydrophobic silica, 0 to 3 parts of wetting agent and 99.9 to 50 parts of water, the hydrophobic silica being either a pyrogenic silica hydrophobized with a silane or a precipitated silica hydrophobized with a silane.

4,274,884

METHOD OF REMOVING WALLPAPER

Jeffery Cartwright, Newton Abbot, England, assignor to Sterling Winthrop Group Limited, London, England

Continuation-in-part of Ser. No. 875,930, Feb. 7, 1978, abandoned. This application May 2, 1979, Ser. No. 35,299

Claims priority, application United Kingdom, Jul. 30, 1977, 32100/77

Int. Cl.³ B08B 7/04

U.S. Cl. 134—4 **19 Claims**

1. A method for removing, from a supporting surface, wallpaper having a surface coating of emulsion paint containing a plastics binder resin, wherein said method includes the steps of:

applying an emulsion-painted wallpaper remover to said surface coating,

leaving said wallpaper remover to plasticize said binder resin to form a cohesive, pliable paint film and thereafter,

scoring said paint film and underlying paper with a sharp instrument,

raising the edge of said paint film and adhering paper adjacent the score mark and pulling the raised edge away from said supporting surface to remove a strip of said paint film and adhering paper progressively from said surface, said wallpaper remover consisting essentially of: at least one organic compound capable of plasticizing said plastics resin, each said at least one compound having a flash point above 35° C., a boiling point above 120° C. and an evaporation number greater than 30, based on the evaporation number of diethyl ether being 1; an emulsifying agent; and a thickening and suspending agent.

4,274,885

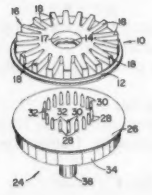
METHOD FOR WASHING CENTRIFUGAL ANALYZER TEST DISKS

Bobbye J. Swartout, Rte. 2 Box 326, Etowah, Tenn. 37331

Filed Jul. 19, 1979, Ser. No. 59,119

Int. Cl.³ B08B 5/04

U.S. Cl. 134—21 **2 Claims**



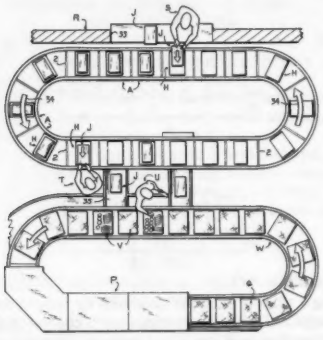
1. The method of washing a centrifugal analyzer test disk having a multiplicity of radially extending test cells, each cell having a first and a second radially spaced aperature communicating with the cell interior, said method comprising:

inserting into one of the first and second apertures of each cell a finger having a through bore so the bore is in flow communication with the respective cell, immersing said disk in a bath of washing solution so the solution may enter the other of said first and second apertures, and applying to the fingers a pressure lower than that of the bath to draw said solution through the cells with the fingers.

4,274,886
MOTOR DRIVEN ENDLESS TRAY ACCUMULATOR FOR DISHWASHING

Tore H. Noren, 3200 Lakeville Hwy., Petaluma, Calif. 94952

Filed Jul. 31, 1979, Ser. No. 62,293
Int. Cl.[3] B08B *3/04*
U.S. Cl. 134—25.2 3 Claims

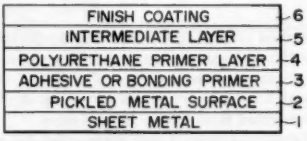


1. The herein described steps in the method of:
(a) placing a plurality of trays with soiled dishware at random intervals in a succession of racks of an endless train of racks that are continuously moving about a closed loop;
(b) removing the trays from their racks at a station along the train of racks and transferring them to a second and adjacent endless train of moving dollies;
(c) moving these dollies with their soiled trays and dishware through a dishwashing area for removal as clean trays and dishware, any trays and dishware not being removed from the tray racks at the station then being moved about said closed loop to return the remaining trays and dishware to said station; and
(d) removing these remaining trays and dishware and transferring them to the endless train of dollies for washing them.

4,274,887
LACQUER COATED METAL SURFACE

Dieter Pogoda, Hamburg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 680,903, Apr. 28, 1976. This application Aug. 20, 1979, Ser. No. 68,056
Claims priority, application Fed. Rep. of Germany, May 2, 1975, 2519559
Int. Cl.[3] B32B *15/20, 15/08*
U.S. Cl. 148—31.5 14 Claims



1. A protected sheet metal comprising a pickled surface, an adhesive primer coating on said pickled surface, a polyurethane primer layer on said adhesive primer coating, an intermediate layer on said polyurethane primer layer and a finish coating on said intermediate layer, said intermediate layer being removable by a process which does not affect said polyurethane primer layer, said finish coating being removable by a process which does not affect said intermediate layer, thereby facilitating the renewal solely of the finish coating and protecting said polyurethane primer layer and the surface below the polyurethane primer layer.

4,274,888
MAGNETIC CORES

Heinrich Schnurbus; Horst Nelle, and Wilhelm Wolf, all of Essen, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,417
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1977, 2744333
Int. Cl.[3] C21D *1/04*
U.S. Cl. 148—108 16 Claims

1. A process for preparing a magnetic core for use with unipolar pulses and having a maximum available flux density change of more than 1 T and have a high pulse permeability, comprising the steps of:
(1) melting an iron-nickel alloy containing from 49 to 56 weight percent nickel;
(2) shaping said melted alloy;
(3) rolling said alloy into a thin tape having a maximum thickness of 0.1 mm;
(4) forming said tape to form a magnetic core;
(5) treating said core in a hydrogen atmosphere at a temperature above 1000° C. for about 3 to 6 hours;
(6) cooling said core to room temperature;
(7) reheating said core to above Curie Point temperature; and
(8) cooling said core in a magnetic field transverse to the direction of the magnetic flux obtained in application.

4,274,889
METHOD FOR PRODUCING SUPERCONDUCTORS

Kyoji Tachikawa, Tokyo; Yoshiaki Tanaka, Sakura; Yuji Yoshida, Sakura, and Toshihisa Asano, Sakura, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Continuation of Ser. No. 10,123, Feb. 7, 1979, abandoned. This application May 20, 1980, Ser. No. 151,758
Claims priority, application Japan, Apr. 3, 1978, 53/38154
Int. Cl.[3] H01L *39/24*
U.S. Cl. 148—133 14 Claims

1. In a method for producing V_3Ga superconductors which comprises forming a composite of a core portion and a sheath portion surrounding said core portion, said sheath portion being composed of a gallium-containing alloy selected from the group consisting of copper-gallium and coppr-silver-gallium alloys, and said core portion being composed of a vanadium metal, elongating said composite, and heat-treating the resulting elongated composite to form a V_3Ga layer between said sheath and core portions; the improvement wherein the gallium-containing alloy has a gallium content of 0.1 to 30 atomic percent and additionally contains at least one metal selected from the group consisting of 0.05 to 5 atomic percent of magnesium, 0.1 to 10 atomic percent of cerium and 0.05 to 10 atomic percent of sodium, and the vanadium metal is a vanadium alloy containing 0.1 to 15 atomic percent of gallium.

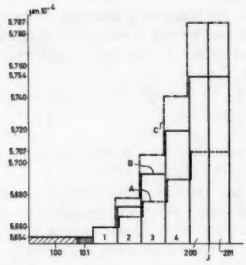
4,274,890
METHOD FOR THE EPITAXIAL MANUFACTURE OF A SEMICONDUCTOR DEVICE HAVING A MULTI-LAYER STRUCTURE

Jacques J. Varon, Troarn, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,257
Claims priority, application France, Sep. 8, 1978, 78 25861
Int. Cl.[3] H01L *21/208*
U.S. Cl. 148—171 10 Claims

1. A method for epitaxial manufacture of semiconductor devices having a multilayer structure consisting of a base semiconductor substrate extending to an upper active surface with

a p-n junction in proximity thereto comprising the steps of forming an epitaxial connection layer on said substrate having a chemical composition substantially identical to said substrate, forming a plurality of successive epitaxial intermediate layers on said connection layer, said intermediate layers being chemically formed by elements of said substrate with at least one additional complementary element, said complementary element in each intermediate layer substantially increasing in amount in each intermediate layer in proportion to distance from said substrate, said substrate having crystal lattice dimensions smaller than those of said intermediate layers, and forming at least one semiconductor layer on said intermediate layers, said semiconductor layer being chemically formed by elements of said substrate with at least one additional complementary element, said substrate having crystal lattice dimensions smaller than those of said semiconductor layer, wherein the relative increase of said crystal lattice dimensions of a first intermediate layer in closest proximity to said substrate is chosen to be less than 1.2×10^{-3} relative to the crystal lattice dimensions of said substrate, and wherein the relative increase of the crystal lattice dimensions a_n of the n^{th} intermediate layer to the crystal lattice dimensions a_{n-1} of the $n-1$ intermediate layer is chosen to be equal to αn where α is a coefficient between 6×10^{-4} and 1.6×10^{-3}



4,274,891

METHOD OF FABRICATING BURIED INJECTOR MEMORY CELL FORMED FROM VERTICAL COMPLEMENTARY BIPOLAR TRANSISTOR CIRCUITS UTILIZING MONO-POLY DEPOSITION

Victor J. Silvestri, Mount Kisco; Denny D. Tang, Yorktown Heights, and Siegfried K. Wiedmann, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,486
Int. Cl.³ H01L *21/20, 21/22*
U.S. Cl. 148—175 **34 Claims**

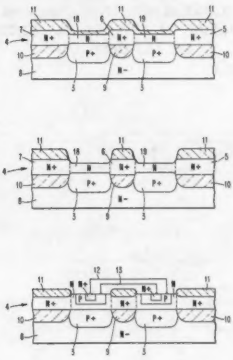
1. A method of manufacturing a semiconductor device having vertical complementary bipolar transistors comprising the steps of:

forming regions of dielectric isolation in contiguous relationship with a semiconductor substrate and a region of semiconductor of one conductivity type between said dielectric isolation regions said substrate being a semiconductor of opposite conductivity type,

depositing a layer of semiconductor material of said opposite conductivity type on said regions of dielectric isolation and on said semiconductor region of one conductivity type to form polycrystalline regions and a single crystal region on said regions of dielectric isolation and on said region of one conductivity type, respectively,

masking said single crystal region of opposite conductivity type,

introducing a dopant of opposite conductivity type into said polycrystalline regions to render said polycrystalline regions conductive, and,



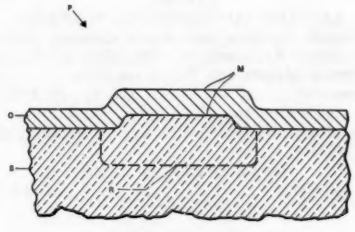
forming a zone of said one conductivity type in said region of single crystal semiconductor and a zone of said opposite conductivity in said zone of said one conductivity type.

4,274,892

DOPANT DIFFUSION METHOD OF MAKING SEMICONDUCTOR PRODUCTS

Alan S. Templin, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 14, 1978, Ser. No. 969,322
Int. Cl.³ H01L *21/225*
U.S. Cl. 148—188 **4 Claims**



1. The method of making a silicon semiconductor product having a patterned doped region, comprising the steps of:

forming on an unmasked surface of a silicon substrate a patterned layer of polycrystalline silicon doped with a dopant selected from Group III or Group V of the Periodic Table of Elements and surrounded by and rising above a bare surface portion of said substrate; and

heating said substrate and layer in an oxygen environment at a temperature and for a period of time sufficient to concurrently oxidize substantially all the polycrystalline silicon in said layer, diffuse said dopant into said substrate, and consume by oxidation said bare surrounding substrate surface portion, thereby forming a patterned upstanding mesa structure on said substrate and a correspondingly patterned buried doped region below and locationally marked by said mesa structure.

4,274,893

HIGH TEMPERATURE TWO COMPONENT EXPLOSIVE

James E. Mars, Vashon; Donald R. Poole, Woodinville; Eckart W. Schmidt, Bellevue, all of Wash., and Charles Wang, Lafayette, Ind., assignors to Rocket Research Company, Redmond, Wash.

Filed Mar. 26, 1979, Ser. No. 23,786
Int. Cl.[3] C06B *45/00*
U.S. Cl. 149—2 59 Claims

1. A high temperature, thermally stable explosive composition comprising:

a low melting oxidizer selected from the group consisting of nitric acid, alkali or alkaline earth metal nitrates, nitrites, perchlorates and mixtures thereof,

a liquid or low melting organic fuel, said fuel and said oxidizer in admixture being thermally stable at temperatures on the order of 475° K. and having a relatively high energy of activation at temperatures on the order of 475° K.

4,274,894

ALUMINUM POWDER BLASTING SLURRY SENSITIZER

Wray G. McNeely; Stanton E. Jack, and John H. O'Dette, all of Kingston, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Jun. 15, 1978, Ser. No. 915,720
Claims priority, application United Kingdom, Jun. 24, 1977, 26636/77
Int. Cl.[3] C06B *45/34*
U.S. Cl. 149—7 11 Claims

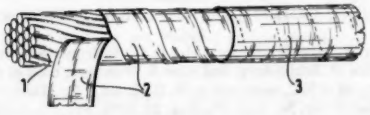
1. A substantially non-dusting fine particle size water-dispersable aluminum powder composition containing, based on the weight of aluminum powder present, from 5% to 20% by weight of a polyvinylpyrrolidone resin and from 30% to 50% of a liquid medium chosen from either a hydrocarbon or a polar solvent capable of swelling or dissolving the polyvinylpyrrolidone resin.

4,274,895

METHOD OF MANUFACTURING A FLEXIBLE ELECTRIC CABLE WHICH HAS A TINNED STRANDED CONDUCTOR ON WHICH AN INSULATION IS APPLIED AT A HIGH TEMPERATURE

Edith Bascou, Draveil, and Jean-Pierre Ferlier, Yerres, both of France, assignors to Filotex, Draveil, France

Filed Jan. 28, 1980, Ser. No. 115,852
Claims priority, application France, Dec. 18, 1979, 79 30995
Int. Cl.[3] H01B *1/02*
U.S. Cl. 156—53 7 Claims



1. A method of manufacturing a flexible electric cable with a tinned stranded conductor on which insulation is applied at a high temperature, said method including the following steps:

preparing a flexible conductor (1) constituted by several tinned copper strands which will not block; and

applying a conductor insulation sheath (2, 3) at a temperature at which there is a danger of melting the tin and of blocking the tin-plated strands together while causing partial diffusion of tin in copper; the improvement comprising:

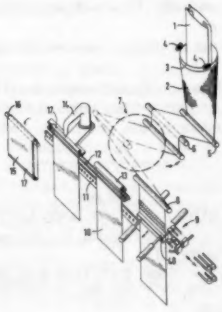
between and/or before said steps during which a flexible conductor (1) is formed and said conductor is insulated, forming a diffusion barrier, including heating of the individual strands or stranded conductor at a temperature and for a period which ensure previous diffusion of tin in copper in a quantity which is sufficient to cause subsequent diffusion of tin in copper during the insulation step to take place more slowly, so that there remains some pure tin at the end of the insulation step, although the layer of pure tin on the strands at the beginning of the insulation step is sufficiently thin to prevent blocking of the strands to occur.

4,274,896

METHOD FOR MAKING SACKS WHICH ARE OPEN AT ONE END AND COMPRISE AN OUTER SACK OF WOVEN PLASTICS TAPE FABRIC

Frank Bosse, Tecklenburg i. W., Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,246
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842954
Int. Cl.[3] B32B *31/08, 31/18, 31/20;* D03D *47/50*
U.S. Cl. 156—88 5 Claims



1. A method of making sacks which are open at one end and comprise a load-supporting outer sack of circular woven fabric comprising stretched plastics tapes and a sealing inner sack of thermoplastic film connected thereto by a base seam, the inner sack having a melting point less than the melting point of the outer sack, said method comprising:

weaving a tube of circular woven fabric defining the outer sack around a flattened tubular web defining the inner sack;

applying transversely-extending strips of hot-melt adhesive to both sides of the flattened tube of circular woven fabric;

contacting the strips of applied adhesive with rollers to thereby cool the adhesive;

separating individual tube sections from the tube by severing cuts through the cooled applied strips of adhesive;

applying a welding temperature below the relaxation temperature of the plastics tape through the webs of woven fabric to a narrow transverse zone spaced from the adhesive strips for a time period sufficient to form a transverse weld seam in the inner sack; and

applying a base seam engaging the inner and outer sacks to the tube section to complete formation of the individual sack.

4,274,897

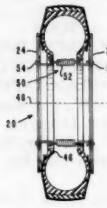
METHOD AND APPARATUS FOR VULCANIZING TIRES

Carlton K. Barefoot, 601 Shellbark, Muncie, Ind. 47304

Filed Jul. 13, 1979, Ser. No. 57,417
Int. Cl.[3] B29H *17/36*
U.S. Cl. 156—96 25 Claims

12. A method for retreading an unmounted tire with a precured premolded tread comprising the steps of:

a. covering the sides of a tire and a precured tread assembly with a thin flexible envelope which extends only from sidewall to sidewall around the outer perimeter of said tire,
b. positioning a sealing grid on each sidewall of said tire whereby an annular ring of said sealing grid urges the envelope against the sidewall,
c. detachably joining the sealing grids together,



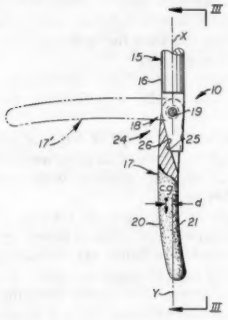
d. placing the assembly, the envelope and the sealing grids in an autoclave,
e. evacuating the air trapped between the tire and the envelope,
f. subjecting the assembly, the envelope and the sealing grids to a heated pressurized environment to cause the tread to be vulcanized to the tire.

4,274,898

TIRE BUFFING TOOL AND METHOD

Thomas S. Hulting, Jr., East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00666, § 371 Date Aug. 30, 1979, § 102(e) Date Aug. 30, 1979, PCT Pub. No. WO81/00539, PCT Pub. Date Mar. 5, 1981
This PCT application filed Aug. 30, 1979, Ser. No. 93,074
Int. Cl.³ B29H *21/01*
U.S. Cl. 156—98 **14 Claims**



12. A method for buffing an internal surface (14) of a tire (13) comprising the steps of
inserting an elongated, pencil-like buffing tool (10,10*a*), having a shaft (15,15*a*) and a buffing tip (17,17*a*) pivotally connected thereon to form an aligned extension thereof, through an aperture (12) formed through said tire (13),
rotating said buffing tool (10,10*a*) while simultaneously moving the buffer tip (17,17*a*) thereof transversely relative to said shaft (15,15*a*) in response to centrifugal force imposed thereon, and
moving said buffer tip (17,17*a*) into buffing engagement with the internal surface (14) of said tire (13).

4,274,899

METHOD OF MANUFACTURING A TUBULAR TIRE FOR CYCLES

Jean-Christian Duttlinger, Soissons, France, assignor to Wolber, Soissons, France

Division of Ser. No. 935,316, Aug. 21, 1978, which is a continuation-in-part of Ser. No. 780,998, Mar. 24, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,314
Claims priority, application France, Apr. 8, 1976, 76 10229
Int. Cl.³ B29H *17/14*
U.S. Cl. 156—123 R **10 Claims**

1. A method of forming a wholly enclosed tubular tire for cycles, said method comprising:
providing a non-vulcanized tire body in the form of a unitary and single endless band having opposite edges, an inner surface, and an outer surface having thereon a tread;
positioning said tire body around a cylindrical drum with said inner surface positioned radially outwardly and with said outer surface contacting said drum;
positioning a completely enclosed toroidal shaped inner tube formed of non-vulcanized material around said body and said cylindrical drum with said inner tube positioned on said inner surface of said tire body;
wrapping said tire body about said inner tube, and overlapping said opposite edges of said tire body over said inner tube, to thereby enclose said inner tube within said tire body;
joining said overlapped edges to thereby form a cycle tire having irremovably enclosed therein said inner tube, such that said overlapped and joined edges are formed at the outer circumference of said tire and said tread is positioned at the inner circumference of said tire;
twisting said tire such that said overlapped edges are positioned at said inner circumference of said tire and said tread is positioned at said outer circumference of said tire; and
thereafter vulcanizing said cycle tire.

4,274,900

MULTI-LAYER POLYESTER/POLYOLEFIN SHRINK FILM

Walter B. Mueller, Taylors; Henry G. Schirmer, Spartanburg; Julian H. Schoenberg, and Alan S. Weinberg, both of Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 938,191, Aug. 30, 1978, Pat. No. 4,188,443.
This application Jul. 9, 1979, Ser. No. 55,734
Int. Cl.³ B32B *31/16, 31/28, 27/32, 27/36*
U.S. Cl. 156—229 **2 Claims**

1. A process for producing a heat shrinkable polyolefin packaging film having moderate shrink tension comprising the steps of:
(A) coextruding at least three layers of polymeric material concentrically to form a multi-wall tube:
(1) at least one of said layers being an inner layer and comprising a polymer selected from the group consisting of:
(a) homopolymers, copolymers, and terpolymers of ethylene and
(b) blends of ethylene homopolymers or copolymers with butylene homopolymers or copolymers, said

inner layer comprising 47% to 90% of the total thickness of said laminate;

(2) Another of said layers comprising a polymer selected from the group consisting of polyesters and copolyesters;

(B) rapidly cooling said extruded tube;

(C) heating said extrudate to a temperature in the range of 80° C. to 200° C.;

(D) biaxially stretching said heated tube until it has a total wall thickness in the range of 0.1 mil to 2.0 mil; and,

(E) rapidly cooling said tube while so stretched whereby the resulting shrink tension in the multi-layer film prepared by slitting said tube is in the range from about 100 p.s.i. to about 400 p.s.i.

4,274,901

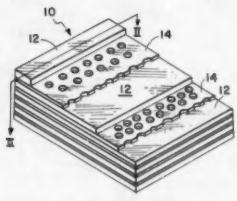
METHOD OF MAKING A PARTIAL INTERLAMINAR SEPARATION COMPOSITE SYSTEM

Wolf Elber, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 889,671, Mar. 24, 1978, Pat. No. 4,229,473. This application Feb. 7, 1980, Ser. No. 119,337

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—242 **3 Claims**



1. A method for enhancing interlaminar shear strength for composite laminates comprising:

providing prepreg resin impregnated fiber tape material having the fibers therein running the length of the tape;

cutting the prepreg tape into a plurality of desired lengths;

laying up and stacking the plurality of lengths of tape in layers of the desired dimensions and to a predetermined thickness;

providing a layer formed by a plurality of thin perforated polyester film strips of essentially the same length and width dimensions as the prepreg tape layers;

positioning one layer of the perforated film strips between each layer of prepreg tape and curing the stacked tape and film strip assembly into a unitary mass under vacuum, pressure and an elevated temperature of at least 465° K. for at least 60 minutes;

cooling the cured assembly to a minimum of 400° K. while maintaining the vacuum and pressure and, after releasing the vacuum and pressure, permitting the assembly to cool to room temperature to thereby yield a composite laminate structure having improved physical property characteristics.

4,274,902

METHOD OF DISPENSING LABELS

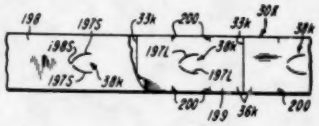
William A. Jenkins, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 715,941, Aug. 19, 1976, abandoned, which is a division of Ser. No. 607,317, Aug. 25, 1975, which is a continuation-in-part of Ser. No. 475,728, Jun. 3, 1974, Pat. No. 3,948,172, and Ser. No. 475,730, Jun. 3, 1974, Pat. No. 3,941,289, which is a division of Ser. No. 366,919, Jun. 4, 1973, abandoned, which is a division of Ser. No. 206,061, Dec. 8, 1971, Pat. No. 3,783,083, which is a continuation-in-part of Ser. No. 155,740, Jun. 23, 1971, abandoned. This application Sep. 26, 1979, Ser. No. 79,123

The portion of the term of this patent subsequent to Jan. 1, 1991, has been disclaimed.

Int. Cl.³ B32B *1/00*

U.S. Cl. 156—344 **4 Claims**



1. Method of dispensing labels, comprising the steps of: providing a plurality of labels releasably secured by pressure-sensitive adhesive to a longitudinally extending web of supporting material, the web having cuts disposed at longitudinally spaced-apart locations forming a series of flap portions extending initially in the plane of the web with each flap portion being integrally connected to the remainder of the web along its leading end to define a fold line and projecting upstream to define a trailing end, there being a further cut defining a feed edge at each fold line, providing a delaminator where the web is caused to undergo a sharp change in direction, orienting the web to travel toward the delaminator with all the leading ends of the flap portions and all the feed edges passing around the delaminator before the corresponding trailing ends and while remaining in the plane of the web, providing a toothed driver, engaging the toothed driver with the web downstream of the delaminator to fold successive flap portions at the fold lines out of the plane of the web and to drivingly engage the feed edges, and pulling on the web by advancing the driver while a tooth of the driver engages a respective feed edge in the web made accessible to the tooth when the flap portion is folded out of the plane of the web.

4,274,903

HIGH SPEED PROGRAMMABLE PRESSURE-SENSITIVE TRANSFER TAPE APPLICATOR

Vernon A. Mock, 2250 Linneman, Glenview, Ill. 60025

Filed Jul. 13, 1979, Ser. No. 57,209

Int. Cl.³ B26D *5/00*

U.S. Cl. 156—355 **10 Claims**

1. A high speed pressure-sensitive transfer tape applicator comprising:

(a) a frame having pedestals spaced on each side of the same;

(b) a top on said frame;

(c) a sheet feed means mounted between said pedestals on the level with said top;

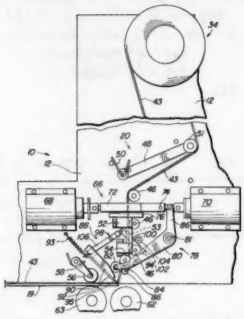
(d) a support member mounted between said pedestals spaced above said feed means;

(e) a tape dispenser mounted on the support member above the sheet feed means;

(f) tape applicator means mounted on the support member above the sheet feed means and below the tape dispenser operationally-connected to said tape dispenser and said sheet feed means said tape applicator means having a track for guiding the tape from the tape dispenser to the sheet

feed means and a tape applicator roller adjacent to the sheet feed means mounted on an arm pivoted on the support member above and opposed to the direction of the sheet feed means relative to the tape guide track;

(g) a cutter guide track mounted on said support member above the sheet feed means and below the tape guide track directed generally along the bisecting angle between the same having a tape guide roller mounted on said support member just below said tape guide track and above the sheet feed means adjacent to the tape applicator roller;



(h) a cutter slidable in the cutter guide track having a spring operationally-connected thereto for urging a retraction from cut-off, and a step-up link and lever drive means operationally-connecting the tape applicator means with the cutter and said sheet feed means;

(i) programming means operationally-connected to said sheet feed means and to said tape applicator means; and

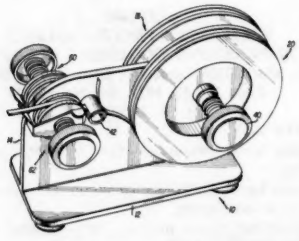
(j) sheet sensing means operationally-connected to the programming means and with the sheet feed means to start the program when sheet is present on the sheet feed means.

4,274,904

TAPE DISPENSER AND APPLICATOR ASSEMBLY

Thomas F. Harrison, 1531 Sherwood Ave., Baltimore, Md. 21239, and Donald I. Gill, 2805 Moorgate Rd., Dundalk, Md. 21222

Filed Jul. 20, 1979, Ser. No. 59,345
Int. Cl.³ B29C *17/00*
U.S. Cl. 156—461 **16 Claims**



1. An assembly capable of supplying a uniform pressure for wrapping a foil-like tape about an edge portion of glass or similar material, while automatically compensating for edge portions of varying thicknesses, and comprising:

a frame assembly, including a base portion and an attached upright portion;

drum means mounted on said upright portion for rotatably supporting at least one roll of foil-like tape of the type having a layer of adhesive on a radially outward side portion when in the rolled state;

applicator means including separate portions each tiltably mounted on a support shaft assembly extending outwardly from said frame for supporting a portion of said tape during application to said edge portion, while simultaneously pressing toward opposite sides of said edge portion with a substantially uniform pressure, causing uniform and smooth adherence of said tape to opposite sides of said edge portion;

groove means formed in adjacently disposed end surfaces of said separate portions of said applicator means for providing a uniform pressure to press a portion of said tape against opposite side wall surfaces of said edge portion of glass or the like during movement of said glass through said groove means;

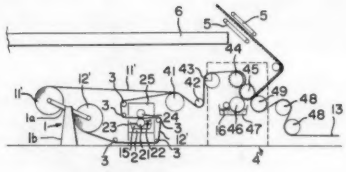
said groove means comprising a groove assembly of variable width including a first section having a width at least as wide as the width of said tape, a second section having a width less than a minimum width of said edge portion of glass and a third section extending between said second section and a bottom surface of said groove assembly, wherein said third section increases in width as the distance from a bottom surface of said groove assembly decreases.

4,274,905

APPARATUS FOR MAKING REINFORCED, DOUBLE FACED CORRUGATED BOARD

Shuji Itoh, Shimizu, and Yoji Yoshida, Nagoya, both of Japan, assignors to Kyokuto Fatty-Acid Corporation, Tokyo, Japan

Division of Ser. No. 853,568, Nov. 21, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,581
Claims priority, application Japan, Sep. 17, 1975, 50-112377
Int. Cl.³ B31F *1/20, 1/00*
U.S. Cl. 156—462 **6 Claims**



1. An apparatus for forming a double-faced corrugated reinforced board which has first and second corrugated layers adhesively affixed to each other, a top facing liner adhesively affixed to said first corrugated layer, and a bottom facing liner adhesively affixed to said second corrugated layer, said apparatus comprising:

holding means for holding separate rolls of corrugating material which form said first and second corrugated layers;

coating means adjacent said holding means for coating one surface of said second corrugating material with an adhesive;

preheater roll means adjacent said coating means for contacting and affixing said adhesive-coated side of said second corrugating material to one side of said first corrugating material;

corrugating-facing means adjacent said preheater roll means for corrugating the resultant assembly of adhesively affixed corrugating layers, coating one side of said corrugated assembly with adhesive, and facing said adhesive-coated side of said assembly with said bottom facing liner to form a bottom faced assembly;

a plurality of guide roll means for directing said second corrugating material into, through, and out of said coating means adjacent said holding means, said plurality of guide

roll means comprising guide rolls positioned with respect to each other in a manner for directing said second corrugating material beneath said coating means from said holding means to a position between said coating means and said corrugating-facing means, then through said coating means to a position between said coating means and said holding means, then upwardly and to a position above said coating means, and then to said preheater roll means;

bottom facing preheating means adjacent said corrugating-facing means for heating said bottom facing liner and supplying said heated bottom facing liner to said corrugating-facing means;

conveying means for withdrawing said bottom faced assembly away from said corrugating-facing means; and

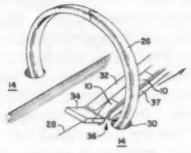
facing means adjacent said conveying means for applying said top facing liner to the top surface of said bottom faced assembly.

4,274,906

APPARATUS FOR AUTOMATICALLY APPLYING REINFORCING TABS TO LOOSE-LEAF SHEETS

Milton Clar, Bethesda, Md., assignor to Leonard S. Blondes, Bethesda, Md., a part interest

Filed Oct. 23, 1979, Ser. No. 87,634
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—540 **10 Claims**



1. An apparatus that automatically applies a reinforcing tab carried on a carrier strip to a sheet in a loose-leaf binder at the region of the sheet between a hole in the sheet through which a ring of the loose-leaf binder passes and an adjacent edge of the sheet, comprising a tab guide projecting from a case, the tab guide sized to fit within the ring of the loose-leaf binder and to position the carrier strip between the edge of the sheet and the hole in the sheet through which the ring passes, means mounted on the case for advancing the carrier strip around an end of the tab guide within the ring, means for separating a tab from the carrier strip as it passes around said end, and means on the tab guide for pressing the tab onto the sheet.

4,274,907

METHOD OF CHEMICALLY POLISHING A DOUBLY ROTATED QUARTZ PLATE

John R. Vig, Colts Neck, and Ronald J. Brandmayr, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 8, 1980, Ser. No. 147,778
Int. Cl.³ C03C *15/00, 19/00*
U.S. Cl. 156—637 **51 Claims**

1. Method of chemically polishing at least one side of a doubly rotated quartz plate whose theta (θ) angle is between about 33° and 36° and whose phi (ϕ) angle is between about 10° and 26°, comprising lapping the quartz plate with an abrasive and etching the lapped quartz plate in a fluoride type etchant selected from the group consisting of about a 5 percent to 25 percent solution of hydrofluoric acid (HF), about a 5 percent to 50 percent solution of ammonium bifluoride ($NH_4F.HF$), and a mixture of 40 percent ammonium fluoride with 49 percent hydrofluoric acid in the ratio ranging from about 1:3 to 10:1, said etching being carried out until a thickness is removed from the plate that is at least twice the average abrasive particle diameter in the final lapping abrasive.

4,274,908

CYANIDE FREE SOLUTION AND PROCESS FOR REMOVING GOLD-NICKEL BRAZE

Robert E. Fishter, Boca Raton, and Brian A. Manty, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 933,944, Aug. 15, 1978, abandoned. This application May 15, 1980, Ser. No. 150,276
Int. Cl.³ C09K *13/04; C23F 1/00*
U.S. Cl. 156—637 **6 Claims**

1. A method for removing gold-nickel type braze material from brazed metallic articles selected from the group consisting of stainless steels, cobalt superalloys and nickel superalloys, without significant base metal attack consisting of:

immersing the brazed articles in a heated aqueous solution which contains from about 40 to about 50% concentrated nitric acid, about 0.01 to about 0.1 mole/l sulfate ions, from about 0.005 to about 0.2 mole/l chloride ions, and at least about 0.001 mole/l metal ions, said solution being held at a temperature between about 75° and 150° F., for a period of time sufficient to remove the braze without adversely affecting the metallic article.

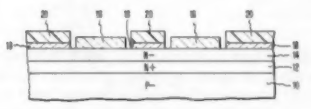
2. A process as in claim **1** wherein the solution is ultrasonically agitated to increase the rate of braze material removal.

4,274,909

METHOD FOR FORMING ULTRA FINE DEEP DIELECTRIC ISOLATION

Krishnamur Venkataraman, and Bob H. Yun, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,882
Int. Cl.³ H01L *21/20, 21/22, 21/308*
U.S. Cl. 156—648 **18 Claims**



11. A method for making a highly dense integrated circuit structure having fine, deep dielectric isolation in a silicon body between devices regions comprising:

forming a patterned first layer of material on said body over a first set of alternately designated device regions;

depositing a uniform thickness, continuous conformal coating over said layer and on said body in a second set of alternately designated device regions and the designated isolation regions separating said alternately designated first and second device regions;

said coating having a thickness which is less than the thickness of said first layer and is substantially the planned width of said isolation;

depositing a second layer over the entire surface of said conformal coating;

the said first layer and said conformal coating are composed of different materials and said first and second layers are composed of different materials;

planarizing the surface by removing said second layer and conformal coating from said first layer and said designated isolation regions above the level of the first layer wherein said second set of alternately designated device regions in said body are covered by said conformal coating and said second layer with portions of said conformal coating below the level of the first layer exposed;

removing the exposed portions of said conformal coating to

expose said designated isolation regions on the silicon body;

anisotropically etching a groove in said silicon body at the exposed regions, using said remaining conformal coating and first layer as an etch mask, to the desired depth of the said dielectric isolation in said designated isolation regions;

filling the said groove with dielectric material to form said deep dielectric isolation; and

forming semiconductor devices in said designated device regions.

4,274,910

EVAPORATOR FOR CONCENTRATING MINERAL ACID, PARTICULARLY SULPHURIC ACID

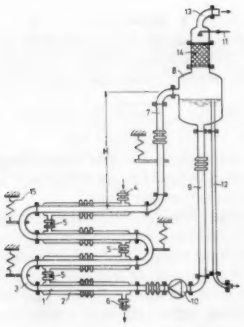
Hansruedi Forter, Ormalingen, Switzerland; Jürgen Groening, Siegburg, Fed. Rep. of Germany; Hans L. Kühnlein, Fuellinsdorf; Hans R. Küng, Frenkendorf, both of Switzerland; Joachim Maas, Bergheim, and Karl-Heinz Schultz, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,422

Claims priority, application Switzerland, Jun. 13, 1979, 5513/79; Fed. Rep. of Germany, May 16, 1980, 3018662

Int. Cl.³ B01D *1/02*

U.S. Cl. 159—1 C **6 Claims**



1. A circulation evaporator for concentrating mineral acid, particularly sulphuric acid, comprising parts of, or at least coated with, enamel, characterised by a heat exchanger for heating the acid comprising at least one acid feed pipe provided with an enamel layer, means being provided to maintain the compressive stress in the enamel layer under all working conditions, said acid feed pipe being connected at its inlet end to a circulation pump and at its outlet end to a flash evaporator for concentrating the heated acid, this evaporator being connected by a circulation pipe to the pump inlet and to means for introducing the crude acid, for discharging the concentrate and for carrying away the vapours.

4,274,911

METHOD OF COOKING CELLULOSE MATERIAL AND PRESERVING THE HEAT AND TERPENTINE CONTENT OF THE COOKING LIQUOR

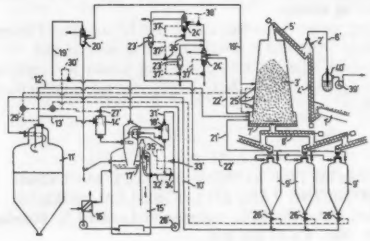
Erik G. Kroneld, and Per-Erik Andersson, both of Sundsvall, Sweden, assignors to Obbola Linerboard Aktiebolag, Sweden

Filed Jul. 26, 1979, Ser. No. 60,930

Claims priority, application Sweden, Jul. 27, 1978, 7808198; Aug. 23, 1978, 7808897

Int. Cl.³ D21C *1/02, 11/06*

U.S. Cl. 162—15 **18 Claims**



1. A method for producing chemical pulp by cooking cellulosic material containing terpentine comprising feeding said cellulosic material into a storage container so as to produce a bed of said cellulosic material therein, transporting said cellulosic material from said storage container into a digester, cooking said cellulosic material in said digester so as to produce a cooking liquor containing terpentine therein, removing said cooking liquor from said digester, producing expansion steam containing terpentine from said cooking liquor, introducing at least a portion of said expansion steam into the lower portion of said bed of cellulosic material in said storage container so as to transfer a substantial portion of the heat and terpentine contents of said expansion steam to said cellulosic material and produce a heated zone therein, regulating the flow of said expansion steam introduced into said bed of cellulosic material so that said heated zone is maintined below the surface of said bed, and withdrawing uncondensed gases from said storage container countercurrently to the flow of said cellulosic material into said storage container so as to prevent the entry of air contained in said cellulosic material into said storage container.

4,274,912

PROCESS FOR BLEACHING PREOXIDIZED PAPER PULP

Jacques E. Carles, and Michel Durand, both of Saint Gaudens, France, assignors to Groupement Europeen de la Cellulose, Paris, France

Filed Jul. 19, 1979, Ser. No. 59,256

Claims priority, application France, Aug. 1, 1978, 78 22719

Int. Cl.³ D21C *9/12*

U.S. Cl. 162—41 **12 Claims**

1. A process for bleaching an oxygen or peroxide preoxidized paper pulp to produce a pulp having a very high degree of whiteness with a limited number of treatment steps while reducing pollution without degrading the qualities of the pulp comprising essentially the combination of three successive treatment steps, namely:

(a) a first step of hot chlorination with gaseous chlorine, at a temperature of between about 30° and 80° C. in the presence of urea in an amount between about 0.5 to 5% by weight of the chlorine used, with a concentration of pulp between 3 and 30%, and a duration of retention of the chlorine of 30 seconds to 45 minutes;

(b) a second step of alkaline extraction in the presence of an oxidizing agent of the hypochlorite type, and in the presence of urea in an amount between about 1 to 10% by weight of the chlorine in the form of hypochlorite, at a

temperature of between about 30° and 70° C. and a pH of between about 8 and 12; and

(c) a third step of treatment with chlorine dioxide, at a temperature of between about 60° and 90° C. at an initial pH of between about 5 and 11, and recycling effluent of at least one of second and third treatment steps for intermediate washing preceding the corresponding step.

4,274,913
PROCESS FOR PRODUCING ALKALI PULP

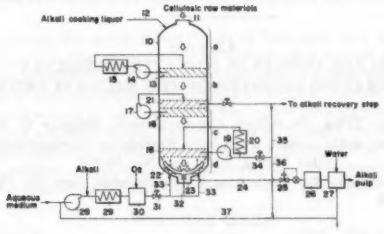
Makoto Kikuiri; Yoshimi Nakashio; Yasue Arai, and Toshio Hidaka, all of Kure, Japan, assignors to Toyo Pulp Co., Ltd., Tokyo, Japan

Filed May 22, 1979, Ser. No. 41,505

Claims priority, application Japan, May 23, 1978, 53-60638; Sep. 19, 1978, 53-114882; Dec. 15, 1978, 53-156026; Apr. 6, 1979, 54-41839

Int. Cl.³ D21C *3/26*

U.S. Cl. 162—65 **11 Claims**



1. In a process for producing alkali pulp by using a single, cylindrical pressurized reaction vessel having therein a liquor-impregnating zone, a cooking zone, a washing zone and a diluting zone in that order, and having a motor-driven scraping or agitating device and a pulp discharging outlet in the end portion of the diluting zone, which process comprises continuously introducing chip-form cellulosic raw materials into the reaction vessel, subjecting the cellulosic materials to impregnation of alkali cooling liquor, alkali cooking, washing and diluting, in succession, during their transfer inside the reaction vessel, and continuously discharging resulting pulp out of the vessel through the pulp discharging outlet, the improvement comprising:

continuously introducing alkaline aqueous medium containing dissolved oxgygen into the end portion of the diluting zone;

contacting a part of the introduced alkaline aqueous medium containing dissolved oxygen in a countercurrent manner with cooked cellulosic materials transferred from the washing zone to the diluting zone to proceed with oxygen-alkali delignification in the diluting zone, waste liquor produced during delignification due to the countercurrent contact being transferred to the washing zone where it is used as washing liquor and being finally discharged out of the vessel from the end portion of the cooking zone; and

contacting the remainder of the introduced alkaline aqueous medium containing dissolved oxygen with the cooked cellulosic materials in the diluting zone in a scraping or agitating manner by means of the motor-driven scraping or agitating device to proceed with oxygen-alkali delignification, said remainder of the alkaline aqueous medium being finally used as diluting liquor to be discharged out of the vessel accompanying the resulting pulp from the pulp discharging outlet.

4,274,914
FILTER MATERIAL

Charles H. Keith, Charlotte, and Richard O. Tucker, Locust, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 937,228, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 730,039, Oct. 6, 1976, abandoned. This application Oct. 11, 1979, Ser. No. 84,004

Int. Cl.³ D21F *11/12*; B01D *39/04*

U.S. Cl. 162—109 **9 Claims**

1. As a tobacco smoke filter precursor, a corrugated binder-free non-woven fibrous cellulose ester sheet-like material, comprising from about 65% to about 95% cellulose ester staple fibers and from about 5% to about 35% precipitated cellulose ester fibrets, said fibrets having a surface area of from 12 to 25 square meters per gram and lengths of less than 1000 microns, said sheet-like material having a sheet weight of from 20 to 40 grams per square meter, a surface area in excess of 1 square meter per gram, a sheet breaking strength of from 200 to 1000 g/5 cm. and a porosity through a 1 inch diameter circular sheet of said non-woven fibrous cellulose ester material of between about 1 millimeter and 70 millimeters at a flow rate of 200 cc. per minute.

4,274,915
PROCESS FOR MANUFACTURING HEAT-SEALED PROOFED PAPER OR CARD ON A FOURDRINIER MACHINE

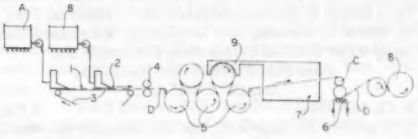
Giovanni Munari, Camposampiero (Padova), Italy

Filed Jan. 9, 1979, Ser. No. 2,164

Claims priority, application Italy, Jan. 13, 1978, 3308 A/78

Int. Cl.³ D21F *11/04, 5/20*

U.S. Cl. 162—129 **7 Claims**



1. A process for the production of heat-sealed, proofed, paper with a Fourdrinier machine, comprising the steps of

feeding a base layer of cellulose fibers onto a traveling support wire,

feeding a mix containing cellulose and approximately 60% polyolefin fibers distributed uniformly on top of the base layer to form two layers on the traveling support wire,

pressing the support wire and both layers while wet,

drying the pressed layers with steam over a plurality of drying rollers to a temperature above 100° C.,

further regulating and heating the top side of the layers, namely the mix containing the cellulose and approximately 60% polyolefin fibers, up to a predetermined temperature which is close to the melting point of the polyolefin fibers,

inserting the layers between rollers of a dry calender while the polyolefin fibers are still at the temperature close to their melting point,

compressing the layers at substantially high pressures at a pressing location between the rollers of the dry calender near the predetermined temperature close to the melting point of the polyolefin fibers such that the uniformly distributed polyolefin fibers interpenetrate between the cellulose fibers in the base layer until a combined continuous layer with heat sealing and impermeable properties is formed and substantially simultaneously but thereafter cooling a free side of said combined continuous layer, said free side then not contacting the rollers, while said top side is still contacting one of the rollers of the dry calender, with circulating water at an exit position from the

rollers of the dry calender remote from the pressing location in order to then lower the temperature of the combined continuous layer leaving the dry calender and to bring the temperature down to normal values, and winding the combined continuous layer on reels.

4,274,916

DIMENSIONALLY STABLE BACKING MATERIALS FOR SURFACE COVERINGS AND METHODS OF MAKING THE SAME

Reginald E. Grose, Westminster, Md., assignor to Congoleum Corporation, Kearny, N.J.

Filed Oct. 1, 1979, Ser. No. 80,908
Int. Cl.³ D21F *11/00*
U.S. Cl. 162—145 **19 Claims**

1. A dimensionally stable fibrous sheet material comprising:
from about 0.2% to about 2% of a stable, water-soluble, cationic, quaternary modified acrylamide polymer having a high charge density of at least about 350 milliequivalents/milligram of unit weight and a high molecular weight of at least about 3 million;
from about 17% to about 34% of polypropylene fibers;
from about 6% to about 23% of glass fibers;
from about 20% to about 39% of wood pulp fibers;
from about 15% to about 60% of a filler or loading agent; and
from about 7% to about 27% of a synthetic resinous polymeric binder, all percentages being by weight, based on the total weight of said dimensionally stable fibrous sheet material.

4,274,917

PAPER PRODUCTS

Clarence R. Murphy; S. Paul Thackabeery, both of Houston, Tex.; Robert E. Boehme, deceased, late of Houston, Tex., and by Helen J. Boehme, sole beneficiary, Kalamazoo, Mich., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1979, Ser. No. 16,060
Int. Cl.³ D21H *5/12*
U.S. Cl. 162—146 **8 Claims**

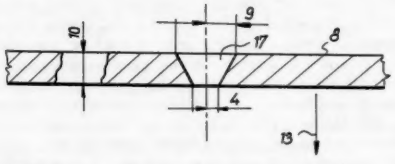
1. A process for improving the tear strength of water-laid cellulose paper sheets prepared from a cellulose furnish which consists essentially of preparing a furnish consisting essentially of at least 90 weight % of a cellulose pulp and about 0.5–10 weight % of olefin polymer fibrils, and forming a water-laid sheet from said furnish; said olefin polymer fibrils being incorporated in the furnish in an amount sufficient to improve the tear strength of water-laid sheet prepared from said furnish; said olefin polymer fibrils having been prepared by a process in which:
(a) the fibrils were prepared from an olefin polymer having a weight average molecular weight of at least one million,
(b) the fibrils were prepared by a multistep process consisting essentially of:
(1) introducing an olefin polymer and a solvent therefor into a first zone,
(2) heating said first zone to a temperature above the atmospheric boiling point of said solvent so as to maintain said olefin polymer in solution and to maintain said first zone under superatmospheric pressure,
(3) transferring polymer solution from said first zone to a second zone through an elongated tube like transfer member,
(4) feeding a propanol to said second zone to maintain liquid propanol above the discharge orifice of the transfer member,
(5) maintaining a temperature in said second zone such that:
(i) the propanol is maintained in the liquid state, and
(ii) the pressure is lower than the pressure in the first zone,
(6) stirring the liquid propanol in said second zone,
(7) precipitating olefin polymer in said second zone to form fibrils,
(8) distilling at least a portion of the polymer solvent from said second zone,
(9) removing a slurry of fibrils and propanol from said second zone,
(10) flash distilling the bulk of any polymer solvent remaining in the slurry recovered in step (9),
(11) passing the fibril-propanol slurry from step (10) through refining apparatus to refine the fibrils, and
(12) recovering refined fibrils and propanol from the slurry of step (11),
the solvent employed in step (1) being characterized in (i) having the capacity of dissolving at least about 1.0 weight % of the olefin polymer at the temperature employed in step (2), (ii) having the capacity of dissolving not more than about 0.2 weight % of the olefin polymer at ambient temperature when diluted with an equal volume of propanol, (ii) having an atmospheric boiling point of less than about 65° C., and (iv) not forming an azeotrope with the propanol employed in step (4),
(c) the fibrils from step (b) were refined in a low molecular weight oxygen containing liquid that is miscible with both hydrocarbons and water, and
(d) the refined fibrils of step (c) were treated in an aqueous solution of polyvinyl alcohol under high shearing forces so as to sorb at least 1.0% of polyvinyl alcohol on said fibrils.

4,274,918

BLADE CONVEYER FOR A CONTINUOUSLY OPERATING DIGESTER OF THE BAUER M AND D TYPE

Ladislav Zilka, Bratislava, Czechoslovakia, assignor to Vyskumny ustav papieru a celulozy, Bratislava, Czechoslovakia

Filed May 2, 1979, Ser. No. 35,388
Claims priority, application Czechoslovakia, Sep. 28, 1978, 6272-78
Int. Cl.³ D21C *7/00*
U.S. Cl. 162—237 **3 Claims**



1. In an apparatus for the continuous digestion of wood chips in the preparation of cellulose comprising an elongated vessel, inclined with respect to a horizontal base plane, having a head end and a tail end divided over a major portion of its length into an upper and lower longitudinally extending blade passage, an endless blade conveyor having apertured blades arranged within the vessel to move downward in the upper blade passage and upward in the lower blade passage, a supply port in communication with the upper blade passage and a discharge port in communication with the lower blade passage, the improvement which comprises blades having conical holes extending through the narrow thickness of the blades wherein the smaller diameter of the conical holes faces in the direction in which the blades move through the apparatus.

4,274,919

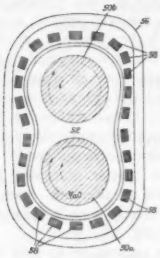
SYSTEMS FOR MERGING OF TOROIDAL PLASMAS

Torkil H. Jensen, Del Mar; Nobuyoshi Ohyabu, La Jolla, and Chung-Lih Hsieh, San Diego, all of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Nov. 14, 1977, Ser. No. 851,431
Int. Cl.² G21B *21/00*
U.S. Cl. 176—3 **7 Claims**

1. In a method for generating and confining toroidal plasmas in which a first toroidal plasma is provided in a vacuum cham-

ber in a toroidal plasma confining magnetic field, an electric current is generated in said first plasma in the direction of the minor toroidal axis of the plasma to provide a poloidal magnetic field for plasma confinement, the improvement comprising the steps of providing a second toroidal magnetically confined plasma in the vacuum chamber adjacent said first plasma and having the same major toroidal axis as said first toroidal plasma but displaced from said first toroidal plasma in a direction along the major toroidal axis of both said first toroidal plasma and said second toroidal plasma, said second plasma being magnetically confined by the same toroidal magnetic field as said first plasma, generating an electric current in said second plasma in the direction of the minor toroidal axis of the second toroidal plasma, having a current polarity the same as that of said first toroidal plasma, and merging said first plasma and said second plasma to provide a combined plasma confined within the same poloidal and toroidal magnetic fields.

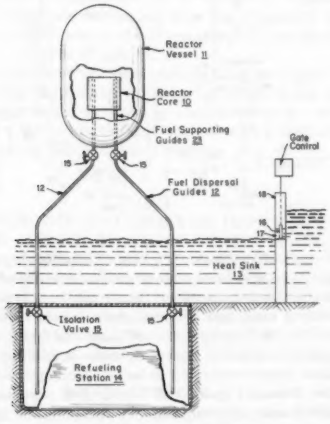


4,274,920

WATER-COOLED NUCLEAR REACTOR WITH PASSIVE EMERGENCY SHUTDOWN AND CORE COOLING CAPABILITY AND ON-LINE REFUELING

George Renko, Jackson Heights, N.Y., assignor to Gibbs & Hill, Inc., New York, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,278
Int. Cl.³ G21C *3/30, 19/20*
U.S. Cl. 176—30 **28 Claims**



1. A water-cooled nuclear reactor which operates at an elevated temperature and pressure during normal operation having passive emergency shutdown and core cooling capability, comprising:

a reactor core comprising a plurality of columnar arrangements of nuclear fuel elements disposed during normal operation within a pressure vessel in a chain reacting relationship, said pressure vessel containing at least sufficient energy to disperse the bulk of the core fuel content by driving it from the core;

a plurality of hollow fuel dispersal guide conduits penetrating said pressure vessel at locations beneath said columnar arrangements and generally aligned therewith, said dispersal guide conduits being generally divergent at least along portions of their length substantially immediately beneath said pressure vessel for receiving nuclear fuel elements therefrom in the event of emergency shutdown and for guiding and dispersing said fuel elements whereby said fuel elements become spaced sufficiently to assume a non-critical dispersed configuration;

an external heat sink of capacity adequate to absorb the residual heat contained in the reactor core and spontaneously generated by said nuclear fuel elements after shutdown, said heat sink being disposed beneath said reactor core so that gravitational attraction aids in driving said nuclear fuel elements along said dispersal guide conduits into said dispersed configuration for cooling said nuclear fuel elements in the event of emergency shutdown; means positioned in series with each guide conduit for communicating said conduit with said pressure vessel for initiating transfer of fuel elements from said pressure vessel into said associated dispersal guide conduit in the event of emergency shutdown; and

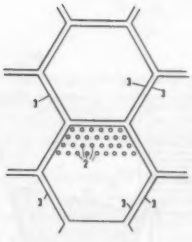
means positioned in series with each guide conduit and adjacent said heat sink for permitting selective withdrawal of fuel elements from, and/or loading fuel elements into, said associated conduit.

4,274,921

FUEL ASSEMBLY FOR FAST NUCLEAR REACTORS

Wilfried Jung, Erlangen, and Peter Rau, Mittelehrenbach bei Forchheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 967,084
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757396
Int. Cl.³ G21C *3/30*
U.S. Cl. 176—78 **5 Claims**



1. Fuel assembly for gas-cooled fast breeder nuclear reactors comprising a cluster of parallel-disposed fuel rods, and a steel casing surrounding said cluster of parallel-disposed fuel rods and defining a coolant flow configuration, the fuel rods being disposed in a manner that the axes thereof intersect imaginary coaxial circles, said casing being of circular cylindrical shape having a wall of lesser thickness than that of an hexagonal fuel-assembly casing of equal strength under like pressure and temperature stresses, so that the resultant increase in nuclear core volume of an assembly of a plurality of said circular-cylindrical fuel-assembly casings over the nuclear core volume of an assembly of hexagonal fuel-assembly casings due to a presence of wedge-shaped spaces between the circular-cylindrical

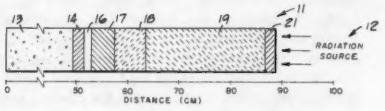
fuel-assembly casings is at most equal to a consequent reduction in nuclear core volume due to a reduction in the amount of steel of the less thicker walls of the circular-cylindrical fuel-assembly casings.

4,274,922

NUCLEAR REACTOR SHIELD INCLUDING MAGNESIUM OXIDE

Carl A. Rouse, Del Mar, and Massoud T. Simnad, La Jolla, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 11, 1978, Ser. No. 905,052
Int. Cl.³ G21C *5/12*
U.S. Cl. 176—87 **16 Claims**



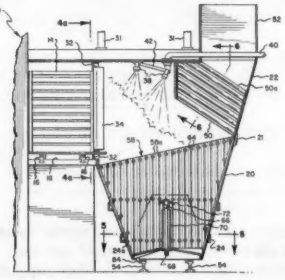
1. In a shield structure for a nuclear reactor characterized by substantial radiation of fast neutrons above an energy level of approximately 70 keV, the shield structure including means providing structural integrity, neutron absorption capability and at least limited neutron moderator capability, a substantial thickness of neutron moderator material being arranged adjacent an inner edge of the shield structure closest to the source of fast neutrons within the reactor, the improvement comprising the use of magnesium oxide as at least a substantial component of the moderator material of the shield structure.

4,274,923

AIR POLLUTION CONTROL METHOD AND APPARATUS FOR THE EXTRUSION AND QUENCHING OF COKE

Kevin D. Mahar, Buffalo, N.Y., assignor to Republic Steel Corporation, Cleveland, Ohio and The Hanna Furnace Corporation, Buffalo, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,960
The portion of the term of this patent subsequent to Sep. 13, 1995, has been disclaimed.
Int. Cl.³ C10B *39/12*
U.S. Cl. 201—39 **20 Claims**



1. In a method for controlling air pollution associated with a coke oven having a plurality of oven chambers adapted to process a corresponding plurality of coke masses and wherein hot coke masses are ejected from said oven chambers through an inlet end of a coke guide and through an outlet end thereof laterally spaced from said coke oven, the improvement comprising the steps of:

providing a vehicle means selectively movable past said oven chambers for indexing with said coke guide and carrying an open topped coke receiving container tiltable about a horizontal axis,

providing a hood to enclose within said hood in a substantially smoketight manner the air space over said container,

mating said hood with said container when in registry with one another,

extruding coke through said coke guide into said container while immobile, when one is indexed to the other, spraying the coke upon passage through said coke guide to said container with a predetermined quantity of liquid insufficient to quench the coke but sufficient to create a vapor atmosphere within said enclosed air space whereby particulate matter within said air space associated with the coke becomes wetted and entrained in said vapor and combustion of said coke in said air space is substantially retarded,

providing a restricted passage through said hood from said air space to ambient atmosphere for venting of said vapor and particulate matter entrained therein, said passage including means to preclude open venting to ambient atmosphere whereby a back pressure of vapor is developed in said hood,

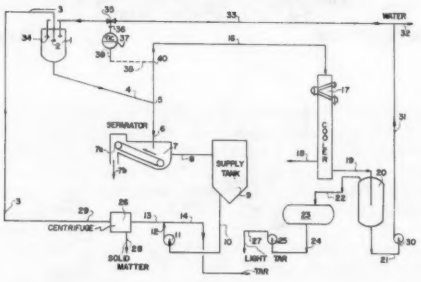
providing means responsive to said back pressure in said hood for removing said wetted, entrained particulate matter from the vapor flow through said passage.

4,274,924

APPARATUS FOR COOLING AND DEDUSTING DEGASIFICATION GASES ESCAPING FROM COAL DEGASIFICATION CHAMBERS

Heinrich Weber, Recklinghausen; Horst Dungs, Herne; Franz Beckmann, Alsdorf; Hugo Schmauch, Merchweiler, and Karl-Heinz Flasch, Bons, all of Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 856,039, Dec. 16, 1977. This application Jun. 8, 1979, Ser. No. 46,619
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1976, 2654187
Int. Cl.³ C10B *27/04, 27/00*
U.S. Cl. 202—255 **2 Claims**



1. An apparatus for cooling and dedusting degasification gases which escape from coal degasification chambers comprising a collecting main, means for circulating a crude tar into the collecting main and into the gases therein to dedust the gases and thereby forming dedusted gases and liquid, means for metering water into said collecting main in addition to crude tar, conduit means connected to said collecting main for separating the dedusted gases and liquid, first separator means connected to said collecting main for receiving the liquid from said dedusted gases and for separating heavy tar and crude tar in the liquid, recirculating means connected to said first separator means for recirculating the separated crude tar back to said collecting main, a cooler for condensing part of the gases to form a condensate, a conduit for gases connected to said conduit means for passing the dedusted gases to said cooler, and

temperature control means operatively connected to said metering means, operatively responsive to the temperature in said conduit for gases, for operating said metering means to inject an amount of said water into the collecting main relative to the degasification gases so as to completely evaporate the water in the collecting main.

4,274,925

METHOD OF ELECTROPLATING AND HONING LIGHT-ALLOY WORKPIECES

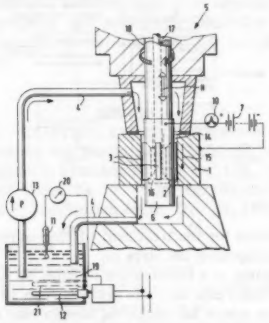
Wolfgang Bässler, Wiesloch, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart and Institut für Werkzeugmaschinen und Betriebstechnik Universität Karlsruhe, Karlsruhe, both of, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,691

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911979

Int. Cl.³ C25D *5/22, 5/30, 7/04*

U.S. Cl. 204—26 **1 Claim**



1. A method of electrodepositing chromium on the internal surface of a cylindrical aluminium base alloy workpiece comprising

(a) placing the workpiece within a honing machine having honing stones and an electrolytic circuit including an electrolyte for said metal

(b) circulating said electrolyte over said surface at a speed of 5 to 6 meters per second at a current density of 250 to 750 A/dm^2 and a temperature of 30° to 40° C. whilst the honing stones are disengaged from the depositing metal and until a first coating of said metal is produced having a thickness of 20 to 50 μm.

(c) moving the honing stones radially so as to engage said deposited metal while continuing deposition of said metal under approximately the same conditions until a second coating is applied to the first coating with a thickness at least equal to that of the first coating.

4,274,926

PROCESS FOR THE ELECTROLYTIC DEPOSITION OF SILVER AND SILVER ALLOY COATINGS AND COMPOSITIONS THEREFORE

Franz Simon, Schmitten, and Manfred Schmidt, Rodenbach, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,765

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914880

Int. Cl.³ C25D *3/66*

U.S. Cl. 204—39 **22 Claims**

1. A composition suitable for the electrolytic deposition of silver or a silver base alloy comprising an electrolyte which is a salt melt bath and consists essentially of a silver salt and an alkali metal thiocyanate or a mixture of a silver salt, alkali thiocyanate and a salt of at least one metal forming an alloy with silver and which salt melt bath contains water in amount of 20 to 200 ml per liter of melt.

4,274,927

PROCESS FOR THE ELECTROLYTIC DEPOSITION OF GOLD AND GOLD ALLOY COATINGS AND COMPOSITIONS THEREFORE

Franz Simon, Schmitten; Wolfgang Zilske, Hanau, and Manfred Schmidt, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,766

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914879

Int. Cl.³ C25D *3/66*

U.S. Cl. 204—39 **24 Claims**

1. A composition suitable for the electrolytic deposition of gold or a gold base alloy comprising an electrolyte which is a salt melt bath and consists essentially of a gold salt and an alkali metal thiocyanate or a mixture of a gold salt, alkali metal thiocyanate and a salt of at least one metal forming an alloy with gold and which salt melt bath contains water in an amount of 20 to 200 ml per liter of melt.

4,274,928

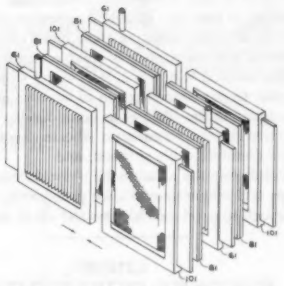
PROCESS FOR ELECTROLYZING BRINE IN A PERMIONIC MEMBRANE ELECTROLYTIC CELL

Hugh Cunningham, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 928,645, Jul. 27, 1978. This application Jul. 30, 1979, Ser. No. 62,211

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **4 Claims**



1. A method of conducting electrolysis in an electrolytic cell having an aqueous acidic anolyte in contact with anode means, an aqueous alkaline catholyte in contact with cathode means, said anolyte being separated from said catholyte by a permionic membrane,

(a) said cathode means comprising a cathode unit having:

(1) a picture frame of four peripheral walls;

(2) internal conduit means within said peripheral walls;

(3) a plurality of parallel, elongate, vertical cathodic elements; and

(b) said anode means comprising an anode unit substantially parallel to said cathode unit, and having a picture frame of four peripheral walls having internal conduit means, anodic elements within said picture frame, and bus bar means to said peripheral walls; and

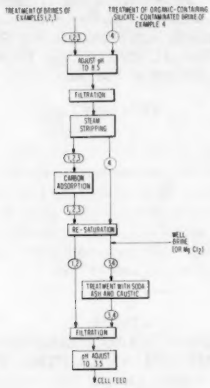
(c) a spacing element interposed between the cathodic elements and the membrane whereby the permionic membrane is nearer the anodic elements than the cathodic elements;

which method comprises feeding brine to the anolyte, passing an electrical current from the anode means to the cathode means, and recovering chlorine and alkali metal hydroxide.

4,274,929
CHEMICAL REMOVAL OF SILICON FROM WASTE BRINE STREAM FOR CHLOR-ALKALI CELL

Donald S. Novak, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 23, 1980, Ser. No. 161,937
Int. Cl.[3] C25B 1/46
U.S. Cl. 704—98 7 Claims



1. A process for reducing the silicate content of an aqueous alkali metal chloride solution containing soluble silicates in an amount in excess of about 20 ppm and for electrolyzing said solution in an electrolytic cell equipped with a diaphragm made at least in part of asbestos, comprising:

(a) adding at least one soluble magnesium compound to the soluble silicate containing alkali metal chloride solution to establish a concentration of soluble magnesium compound in the solution which is at least about stoichiometric with respect to the concentration of silicates in solution, and precipitating the silicates as compounds of magnesium;

(b) separating the magnesium silicate precipitate from the alkali metal chloride solution; and

(c) electolyzing the alkali metal chloride solution, separated from said magnesium silicate precipitate, in said electrolytic cell to produce chlorine and alkali metal hydroxide.

4,274,930
PROCESS FOR RECOVERING COBALT ELECTROLYTICALLY

Victor A. Ettel; Eric A. P. Devuyst; Juraj Babjak, all of Mississauga; John Ambrose, and Gerald V. Glaum, both of Oakville, all of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

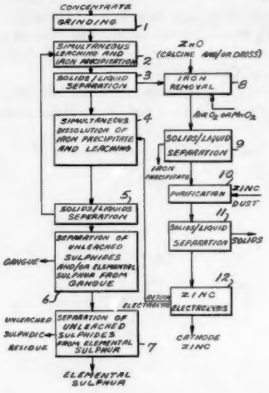
Filed Jul. 28, 1980, Ser. No. 172,751
Int. Cl.[3] C25C 1/08
U.S. Cl. 204—112 12 Claims

1. A process in which a feed which consists of a cobaltic oxide hydrate precipitate is dissolved in a spent sulfate electrolyte from a cobalt electrowinning operation and in which at least one of the feed and spent electrolyte is contaminated with chloride ions, wherein the improvement comprises mixing the feed with the spent electrolyte to form a slurry, sparging air through the slurry for a period sufficient to liberate as gaseous chlorine substantially all of the chloride ions in the slurry, and thereafter treating the dechlorinated slurry with a reducing agent selected from the group consisting of sulfur dioxide, hydrogen peroxide and organic reagents capable of reducing cobalt to its divalent state; whereby substantially all of the cobalt in the feed is dissolved to provide a substantially chloride-free cobalt-containing solution from which pure cobalt can be electrowon.

4,274,931
LEACHING PROCESS FOR ZINC SULPHIDE CONTAINING MATERIALS

Bernard Verbaan, Randburg, South Africa, assignor to National Institute for Metallurgy, Randburg, South Africa

Filed Jan. 18, 1980, Ser. No. 113,284
Claims priority, application South Africa, Jan. 24, 1979, 70/0294
Int. Cl.[3] C25C 1/14
U.S. Cl. 204—119 13 Claims



1. A process for the treatment of zinc sulphide containing materials comprising the steps of:

(i) contacting at a temperature of from 70° C. to 119° C., a sub-divided zinc sulphide material with an aqueous leach solution which has dissolved therein zinc and impurities, from 5 to 50 g/l iron, together with a maximum of 20 g/l sulphuric acid to dissolve zinc and other soluble metals in the zinc sulphide containing material by the oxidative action of ferric ions formed by the co-temporaneous oxidation of ferrous ions to their ferric state and cause precipitation of iron;

(ii) separating the solids and leach liquor resulting from step (i);

(iii) subjecting the leach liquor obtained in step (ii) to any required purification steps followed by electrowinning of zinc therefrom to leave a spent electrolyte having regenerated sulphuric acid therein;

(iv) contacting spent electrolyte resulting from step (iii) above with the solids resulting from step (ii) above to cause redissolution of iron precipitate and the further dissolution of zinc and metal impurities from the residue of the zinc sulphide containing material by the oxidative action of ferric ions resulting from the dissolution of the iron precipitate and also formed by the co-temporaneous oxidation of ferrous ions to their ferric state;

(v) separating the solids and leach solution resulting from step (iv), and;

(vi) utilising the leach solution resulting from step (v) as at least the major portion of the aqueous leach solution employed in step (i).

4,274,932
SEMI-CRYSTALLINE POLYMERS STABILIZED FOR IRRADIATION STERILIZATION

Joel Williams, Cary; Terry Dunn, and Vivian Stannett, both of Raleigh, all of N.C., assignors to Becton Dickinson and Company, Paramus, N.J.

Filed Sep. 10, 1979, Ser. No. 74,250
Int. Cl.[3] C08F 8/00
U.S. Cl. 204—159.2 27 Claims

1. A flexible sterilized article, comprising:

polypropylene having a crystalline content of from 20 to 90 percent, said polypropylene having a narrow molecular weight distribution wherein the ratio of the weight average molecular weight to the number average molecular weight is no greater than 9.0, said polymer having been irradiated with a sterilizing amount of high energy radiation having incorporated therein a mobilizing amount of a non-crystalline mobilizing additive which increases the free volume of the polypropylene and retains the flexibility thereof.

11. A process for sterilizing a semi-crystalline polymer, comprising:

subjecting to a sterilizing amount of high energy irradiation a semi-crystalline polymer having a crystalline content of from 20–90%, said polymer having a narrow molecular weight distribution wherein the ratio of the weight average molecular weight to the number average molecular weight is no greater than 9.0, said polymer having incorporated therein a mobilizing amount of a non-crystalline liquid mobilizing additive which increases the free volume of the polymer and retains the flexibility thereof to thereby produce a sterilized polymer which retains its flexibility.

4,274,933
COATING COMPOSITION

Kazumasa Kamada; Isao Sasaki, and Kenji Kushi, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

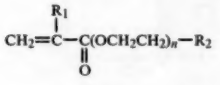
Filed Dec. 14, 1979, Ser. No. 103,626
Claims priority, application Japan, Dec. 28, 1978, 53-164683
Int. Cl.[3] **C08F** *2/46*
U.S. Cl. 204—159.24 **12 Claims**

1. A coating composition comprising

A. from about 5 to about 90 parts by weight of a monomer mixture which consists essentially of

(1) from about 20 to about 95% by weight of a polyfunctional monomer having at least three (meth)acryloyloxy groups in one molecule;

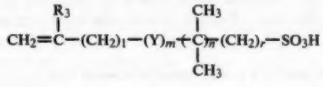
(2) from about 1 to about 25% by weight of a monomer represented by the formula:



(I)

wherein R_1 is hydrogen or a methyl group, R_2 is an alkoxy or (meth)acryloyloxy group of 1 to 5 carbon atoms and n is an integer of 5 to 30;

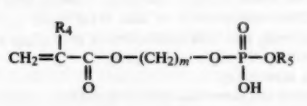
(3) from about 1 to about 15% by weight of a sulfonic acid type monomer represented by the formula:



(II)

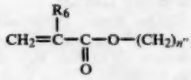
wherein R_3 is hydrogen or a methyl group, Y is a —CONH or —COO group and l, m, n' and r are integers of 0 to 5);

(4) from about 1 to about 20% by weight of a phosphoric acid ester-type monomer represented by the formula:



(III)

wherein R_4 is hydrogen or a methyl group, R_5 is hydrogen or a



group, R_6 is hydrogen or a methyl group and m' and n'' are integers of 1 to 15; and

(5) from about 2 to about 20% by weight of an ethanolamine-type compound represented by the formula:

$$NR_7R_8(CH_2CH_2OH) \quad \text{(IV)}$$

wherein each of R_7 and R_8 is independently hydrogen or an alkyl group of 1 to 15 carbon atoms or a CH_2CH_2C group; together with

B. from about 95 to about 10 parts by weight of at least one organic solvent that forms a uniform solution when mixed with said monomer mixture A; and

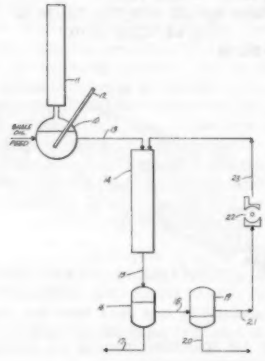
C. up to 10 parts by weight of a photosensitizing agent per 100 parts by weight of the total of the monomer mixture A and organic solvent B;

said coating composition capable of forming a dyeable, cross-linked hardened film high in abrasion resistance, surface smoothness and cloud prevention, said film having a permanent antistaticity when irradiated with active energy rays.

4,274,934
PROCESS FOR REMOVING NITROGEN FROM SHALE OIL USING PYRROLE POLYMERIZATION

Leslie E. Compton, Claremont, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jul. 5, 1979, Ser. No. 55,007
Int. Cl.[3] **C07C** *3/24;* **C10G** *27/00, 21/14*
U.S. Cl. 204—162 R **11 Claims**



1. A process for reducing the nitrogen content of shale oil comprising polymerizing nitrogen-containing compounds selected from the group consisting of pyrroles, indoles, carbazoles and pyrrole-containing compounds by the steps of:

conditioning the shale oil by heating the shale oil to at least about 85° C., or oxygenating the shale oil with an oxygen-supplying gas, or irradiating the shale oil with actinic radiation for forming nitrogen-containing polymers that are insoluble in the shale oil; and

separating the shale oil from the insoluble polymers.

4,274,935
MAGNETIC MEMORY LAYER

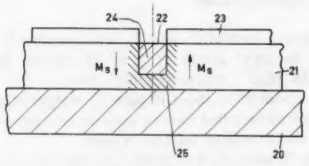
Christoph Schmelzer, Suheim; Reimar Spohr, Darmstadt-Wixhausen; Jens-Peter Krumme; Klaus Witter, both of Hamburg, and Heinrich Heitmann, Rellingen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,369

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732282

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 M **7 Claims**



1. A magnetic memory device comprising a magnetic layer for storing information in the form of a fixed two dimensional array of magnetic domains, which layer can be magnetized in either of two opposite directions, the boundaries of the domains being defined by local gradients in the magnetic properties of the magnetic layer, said magnetic properties including the value and direction of the magnetic anisotropy and the value and direction of the magnetic exchange energy, with the value of the magnetization remaining substantially unaltered;

wherein at the domain boundaries the magnetic layer has a higher defect density than at other areas of the layer and at the domain wall locations the magnetic layer contains implanted ions injected into the layer in a higher concentration than at other areas of the layer thereby causing a relative expansion of the crystal lattice of the layer.

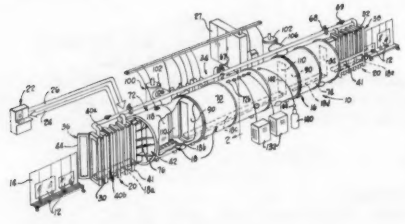
4,274,936
VACUUM DEPOSITION SYSTEM AND METHOD

Robert E. Love, Franklin, Tenn., assignor to Advanced Coating Technology, Inc., Franklin, Tenn.

Filed Apr. 30, 1979, Ser. No. 34,347

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R **17 Claims**



1. A system for sputtering material on substrates at extremely low pressures comprising:

(a) a working chamber comprising a coating chamber section and an isolation chamber section defined by a generally cylindrical pressure wall;

(b) an access chamber adjacent said isolation chamber section;

(c) structure defining pressure gates between said chamber sections and between said access chamber and ambient atmosphere;

(d) roughing vacuum pumping means for evacuating said access chamber to a first, roughing vacuum pressure;

(e) first and second molecular pumping means for evacuating said isolation and coating chamber sections, respectively, said first molecular pumping means effective to evacuate said isolation chamber from a second pressure level substantially less than said roughing vacuum pressure;

(f) a source of gas communicating with said coating chamber section for providing a controlled atmosphere in said coating chamber section; and,

(g) a conveyor system for supporting and moving substrates through said chambers via said gates;

(h) said access chamber formed by pressure wall structure extending closely about substrates conveyed therethrough to minimize the volume of said access chamber and said isolation chamber section defining an internal volume which is no less than about three times larger than said access chamber volume so that when said access and isolation chambers are communicated said isolation chamber effectively further evacuates the access chamber and reduces the pressure in said access chamber substantially to assure said second pressure level in said isolation chamber when said access and isolation chambers are communicated.

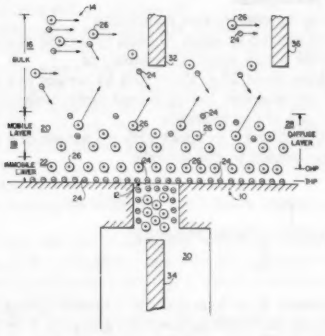
4,274,937
APPARATUS FOR SENSING ELECTRICAL POTENTIALS

Eugene Findl, Amityville, N.Y., and Robert J. Kurtz, Cliffside Park, N.J., assignors to Howmedica Inc., New York, N.Y.

Continuation of Ser. No. 815,072, Jul. 12, 1977, abandoned. This application Aug. 7, 1979, Ser. No. 64,601

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 R **13 Claims**



1. Apparatus for sensing the voltage changes in the electrical potentials at the boundary formed between a flowing fluid and a solid whereby a double layer having an immobile layer in contact with the solid is formed between the boundary and the bulk of the flowing fluid, the apparatus including a sensor comprising:

a solid wall having a porous portion therein that is porous to ionic flow, but impervious to direct fluid communication therethrough;

inlet means for introducing a flowing fluid to one end portion of said solid wall;

means for directing the introduced fluid to flow along said wall;

outlet means for conducting the directed flowing fluid away from the other end portion of said solid wall, said inlet means, said wall, and said outlet means providing a flow path completely through said sensor;

a first passive electrode;

a well located at the same position in said flow path as said porous portion, said well being to fluid communication with said flow path, but having no flowing therethrough;

first means for mounting said first passive electrode in said

well, and thus on one side of said porous portion and spaced from said wall out of said flow path and thus adapted to be in direct electrical contact with the bulk of the fluid on one side of the double layer formed at said porous portion when the fluid is flowing through said flow path along said solid wall;

a second passive electrode of substantially the same composition as said first electrode; and

second means for mounting said second passive electrode on the other side of said porous portion in electrical contact with a fluid when flowing through said flow path, said second electrode thereby being mounted out of physical and direct electrical contact with the fluid when flowing through said flow path and said second electrode thereby being mounted in electrical contact through said porous portion with the immobile layer of the fluid when flowing along said one side of said porous portion and thus on the other side of a formed double layer.

4,274,938
APPARATUS FOR THE PRODUCTION OF HYDROGEN AND OXYGEN

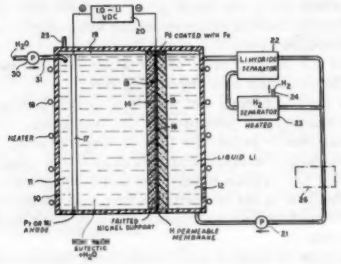
Rudolf Schulten, Aachen-Richterich; Friedrich Behr, Herzogenrath-Kohlscheid, and Helmut Wenzl, J lich, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Division of Ser. No. 12,746, Feb. 16, 1979, Pat. No. 4,235,863. This application Nov. 28, 1979, Ser. No. 97,968

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1978, 2806984

Int. Cl.³ C25B *15/08;* **C25C** *3/02;* **C25B** *9/00, 13/04*

U.S. Cl. 204—239 **5 Claims**



1. An apparatus for the production of hydrogen and oxygen or an oxidized compound, comprising:

an electrolysis cell subdivided by a membrane into an anode compartment and a cathode compartment, said membrane being permeable to hydrogen exclusively by absorption at said anode compartment and diffusion through the membrane, said anode compartment adapted to contain an electrolyte electrolytically disassociatable to produce hydrogen;

means for electrolyzing said electrolyte between an anode in said anode compartment and a cathode at said cathode compartment to disassociate a substance in said electrolyte and produce hydrogen which diffuses through said membrane to said cathode compartment;

means for continuously feeding a molten hydride-forming metal into said cathode compartment whereby said metal reacts with hydrogen and forms the corresponding hydride;

means external of said cathode compartment for thermally decomposing the metal hydride and generating hydrogen; and

means for recycling metal formed by thermal decomposition of the metal hydride to the cathode compartment.

4,274,939
ELECTRODE PACKAGE AND USE THEREOF

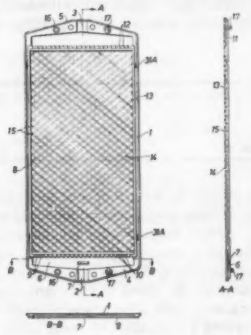
Ake B. Bjäreklint, Vallentuna, Sweden, assignor to Svenska Utvecklingsaktiebolaget (SU) Swedish National Development Co., Stockholm, Sweden

Filed Apr. 10, 1980, Ser. No. 139,119

Claims priority, application Sweden, Apr. 20, 1979, 7903503

Int. Cl.³ C25B *9/02, 9/04, 15/08;* **H01M** *2/14*

U.S. Cl. 204—257 **15 Claims**



1. An electrode package intended for use in an electrochemical cell, especially in a membrane cell in an electrolyzer of the filter-press type, wherein a substantially flat electrode (**32**) is surrounded and located by two mutually engaging substantially flat inner frames (**1**) with inlet and outlet channels (**2** and **3**) for electrolyte, the central opening (**8**), defined by said inner frames, and allowing access of electrolyte to the electrode, being covered by a grid (**13**) on each inner frame; both inner frames in turn are surrounded by a substantially flat outer frame (**20**), having at least one hole (**21, 22**) for supply, and at least one hole (**23, 24**) for discharge of electrolyte, at least one of each of said holes (**22** and **24**, respectively) via its own channel (**25, 26**) being in communication with the respective inlet and outlet channels of the inner frames, the outer frame being locked between the two inner frames by means of locking means (**16, 17**); at least one inner frame, on the side facing towards the electrode and opposite the inlet channel (**2**) is provided with a boss-like projection (**7**) intended to serve as striking surface for incoming electrolyte and for distributing it laterally, and at least in its lower portion (**6**), with a plurality of constriction means (**9**) for the electrolyte in to the electrode; at least the other of the inner frames is provided in its upper portion (**11**) with a plurality of said constriction means (**12**); and the grids of the inner frames comprise ribs (**14, 15**) lying in two planes, which form oblique angles to the electrolyte flow fed to the electrode.

4,274,940
PROCESS FOR MAKING FERRO-NICKEL SHOT FOR ELECTROPLATING AND SHOT MADE THEREBY

Guy Plancqueel, and Irme Toth, both of Rambouillet, France, assignors to Societe Metallurgique le Nickel -S.L.N., Paris, France

Continuation-in-part of Ser. No. 974,447, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 713,432, Aug. 11, 1976, abandoned. This application Jun. 19, 1979, Ser. No. 50,095

Claims priority, application France, Aug. 13, 1975, 75 25178

Int. Cl.³ C25B *11/02, 11/04;* **B22F** *9/08*

U.S. Cl. 204—294 **24 Claims**

1. A process of making ferro-nickel shot suitable for electroplating having a Ni+Co/Ni+Co+Fe ratio ranging from about 20 to 90% by weight, an Fe content ranging from about 10 to 80% by weight, a Co/Ni+Co+Fe ratio ranging from about 0 to 20% and containing a granulating adjuvant wherein about 99.8% by weight of said ferro-nickel shot consists essen-

tially of iron, nickel, cobalt and said granulating adjuvant, comprising granulating in water a molten ferro-nickel alloy containing between 0.1 and 1% by weight of said granulating adjuvant containing silicon, carbon, magnesium, manganese and aluminum to thereby form said ferro-nickel shot, said ferro-nickel alloy containing from the granulating adjuvant about 0.01 to 0.5% silicon, about 0.02 to 0.2% carbon, about 0.01 to 0.4% magnesium, up to about 0.3% manganese, and up to about 0.1% aluminum.

14. A ferro-nickel shot which will withstand a compressive load of 5 metric tons without disintegrating, comprising by weight:

Ni + Co/Ni + Co + Fe	20 to 90%
Fe	10 to 80%
Co/Ni + Co + Fe	0 to 20%
Adjuvants	0.1 to 1.0%

wherein about 99.8% by weight of said ferro-nickel shot consists essentially of iron, nickel, cobalt and said adjuvants comprising silicon, carbon, magnesium, manganese and aluminum, said ferro-nickel shot containing from said adjuvants about 0.01 to 0.5% silicon, about 0.02 to 0.2% carbon, about 0.01 to 0.4% magnesium, up to about 0.3% manganese, and up to about 0.1% aluminum, said shot being prepared by forming a molten alloy having essentially the same composition of the shot, and granulating the alloy in water.

4,274,941

PROCESS FOR GENERATING COMBUSTIBLE GASES, LIQUID COAL BYPRODUCTS AND SUPERHEATED STEAM FROM COAL

Klaus Janssen, Essen; Werner Peters, Wattenscheid, and Hans-Dieter Schilling, Hattingen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Oct. 8, 1975, Ser. No. 620,772

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1974, 2448354

Int. Cl.[3] **C10G** *1/00;* **C10J** *3/00;* **C10B** *47/00, 47/24*

U.S. Cl. 208—8 R **10 Claims**

1. A process for obtaining combustible gas and liquid byproducts from coal and generating steam by the combustion of the coal, the process comprising

(a) charging fine grain size coal into a degasifying first zone of a single generally horizontal fluidizing bed reactor while introducing into said degasifying zone a stream of hot solid ash particles acting as heat exchange particles;

(b) subjecting the coal in said degasifying zone to a fluidizing action at a temperature of about 450° to 600° C. whereby the coal particles are degassed and part of the combustion gas and liquid byproducts formed thereby may be recovered;

(c) passing the fluidized coke particles formed in said degasifying zone together with the hot ash particles into an adjoining second zone of the reactor acting as a combustion zone, the two zones being separated by a vertical partition wall,

the step of passing comprising

using a first syphon means comprised of a shorter inlet portion communicating with said degasifying zone, a longer outlet portion communicating with said combustion zone and a slanting intermediate portion slanting downwardly from the bottom of the inlet portion to the bottom of the outlet portion, the outlet portion being located to the same side of said partition wall as is said second zone, the outlet portion extending vertically upwards from the bottom of the slanting intermediate portion up into said second zone, and

introducing a propelling gas into the outlet portion at a location which is at the bottom of the outlet portion and which is located to the same side of said partition wall as is said second zone, to cause coke and ash particles in the degasifying zone to descend along the slanting intermediate portion under the force of gravity and be impelled upwards through the outlet portion to the top of the outlet portion and thereby enter said combustion zone;

(d) subjecting the coke particles in said combustion zone to fluidization with hot air and burning at a temperature of about 800° to 900° C. to effect the formation of additional ash particles and causing the heat of combustion produced in said combustion zone to be utilized for heating or steam generation purposes;

(e) continuously withdrawing hot ash particles from said combustion zone and feeding them back into said degasifying zone in order to provide said hot ash particles at (a) which are brought into contact with the charges of fresh coal, so as to heat up the coal particles and support their fluidization,

the step of withdrawing comprising

using a second syphon means comprised of a shorter inlet portion communicating with said combustion zone, a longer outlet portion communicating with said degasifying zone and a slanting intermediate portion slanting downwardly from the bottom of the inlet portion to the bottom of the outlet portion of said second syphon means, the outlet portion oeing located to the same side of said partition wall as is the first zone, the outlet portion extending vertically upwards from the bottom of the slanting intermediate portion up into said first zone, and

introducing a propelling gas into the outlet portion of said second syphon means at a location which is at the bottom of the outlet portion and which is located to the same side of said partition wall as is said first zone, to cause hot ash particles in said combustion zone to descend along the slanting intermediate portion of said second syphon means under the force of gravity and be impelled upwards through the outlet portion to the top of the outlet portion of the second syphon means and thereby enter said degasifying zone,

the steps of passing and withdrawing comprising

maintaining the pressures in the two zones sufficiently uniform to permit the flow of fluidized coke and heat exchange particles from said degasifying zone through said first syphon means into said combustion zone and the flow of hot ash particles from said combustion zone through said second syphon means into said degasifying zone,

the steps of passing and withdrawing furthermore comprising maintaining the level of material in said degasifying zone and in said combustion zone higher than the inlet and outlet portions of said first and second syphon means in order to prevent gases located above the level of material in said degasifying zone from freely passing into said combustion zone and in order to prevent gases located above the level of material in said combustion zone from freely passing into said degasifying zone.

4,274,942

CONTROL OF EMISSIONS IN FCC REGENERATOR FLUE GAS

David B. Bartholic, Watchung, and Don S. Chin, Woodbridge, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Edison, N.J.

Filed Apr. 4, 1979, Ser. No. 26,935

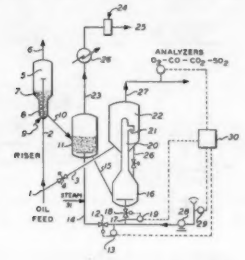
Int. Cl.[3] **C10G** *11/18*

U.S. Cl. 208—113 **25 Claims**

1. In a process for catalytic cracking of a sulfur containing hydrocarbon charge by contacting said charge at cracking temperature with a circulating inventory of cracking catalyst whereby the catalyst acquires an inactivating carbonaceous deposit containing sulfur, separating vaporous products of reaction from circulating catalyst inventory containing said carbonaceous deposit, regenerating said inventory with air at a

temperature to burn said carbonaceous deposit thus generating oxides of carbon and sulfur and regenerating the catalyst, separating products of combustion from regenerated catalyst, and returning regenerated catalyst to renewed contact with hydrocarbon charge, the improvement which comprises:

regenerating said separated inventory by first contacting it with a source of O_2 in the presence of steam using a predetermined quantity of O_2 so limited as to partially oxidize carbon in said carbonaceous deposit while eliminating substantially all hydrogen therein, said contacting being further characterized by the use of steam in amount such that a reducing atmosphere is created by steam and by carbon monoxide resulting from partial oxidation of said carbon and being carried out under conditions to substantially reduce the content of sulfur in said carbonaceous



deposit and produce vaporous products of partial oxidation essentially free from oxides of sulfur and including hydrogen sulfide, carbon monoxide, as aforesaid, carbon dioxide and water vapor, separating said vaporous products of partial oxidation from the resulting partially regenerated inventory containing residual carbon now having a substantially reduced sulfur content, thereafter contacting said partially regenerated inventory with air to burn residual carbonaceous deposit and separating products of combustion from regenerated catalyst, whereby there are reduced amounts of oxides of sulfur and carbon in said products of combustion separated from regenerated catalyst as a result of prior reduction in the amount of sulfur and carbon in said carbonaceous deposit by partial oxidation as aforementioned.

4,274,943

REMOVAL OF METAL ALKARYL SULFONATES FROM HYDROCARBONS

Gifford G. McClaflin, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Sep. 18, 1979, Ser. No. 76,655
Int. Cl.[3] C10M *11/00*
U.S. Cl. 208—181 **8 Claims**

1. A method of removing metal alkaryl sulfonate from a hydrocarbon solution containing the same, said method comprising:

(A) adding water, basic compound and recovery surfactant to a hydrocarbon solution of metal alkaryl sulfonate to form an admixture,

(B) agitating the admixture,

(C) allowing the admixture to form a hydrocarbon phase and an aqueous phase containing metal alkaryl sulfonate, and

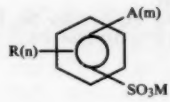
(D) separating the hydrocarbon phase and the aqueous phase said method being characterized further in that

(a) the amount of basic compound is sufficient to provide a pH of at least 7.1,

(b) the amount of water to hydrocarbon is in the range of about 0.5 to about 10:1 on a weight basis,

(c) the amount of recovery surfactant is in the range of about 10 to about 10,000 parts per million by weight, based on the hydrocarbon,

(d) the metal alkaryl sulfonate is represented by the formula



wherein

A = hydrogen or a C_1-C_4 alkyl group

m = 1 or 2 when A is alkyl

R = C_9-C_{18} alkyl group

n = 1 or 2

M = alkali metal

when A is hydrogen, m = 1

when A is alkyl the maximum number of carbon atoms in A(m) is 4, and

the total number of carbon atoms in A(m) and R is in the range of 12 to 22,

(e) the hydrocarbon is liquid and selected from the group consisting of crude oils and C_6-C_{18} straight and branched-chain hydrocarbons,

(f) the recovery surfactant is selected from the group consisting of

(i) ethoxylated alcohols represented by one of the formulae

$$RO(CH_2CH_2O)_nH$$

wherein R is an alkyl group containing from 10 to 20 carbon atoms and n is a number in the range of about 5 to about 40

or

$$R{-}(OCHCH_2)_m\,(CH_2CH_2O)_nOH \quad (CH_3 \text{ on } OCHCH_2)$$

wherein R is an alkyl group containing 10 to 20 carbon atoms, m is a number in the range of 1 to 32, and n is a number in the range of 2 to 30,

(ii) ethoxylated alcohol sulfates represented by the formula

$$[CH_3(CH_2)_xCH_2(OCH_2CH_2)_nOSO_3]M$$

wherein x is an integer in the range of about 8 to about 20, n is a number in the range of about 1 to about 50, and M is NH_4 or Na,

(iii) polyoxyethylene-polyoxypropylene block polymers represented by one of the formulae

$$HO(CH_2CH_2O)_a\,(CHCH_2O)_b\,(CH_2CH_2O)_cH \quad (CH_3 \text{ on } CHCH_2O)$$

wherein a and c are numbers in the range of 1 to 15, with the sum of a and c being in the range of 2 to 30, and b is a number in the range of 1 to 32,

or

$$HO(CHCH_2O)_a\,(CH_2CH_2O)_b\,(CHCH_2O)_cH \quad (CH_3 \text{ on both } CHCH_2O \text{ groups})$$

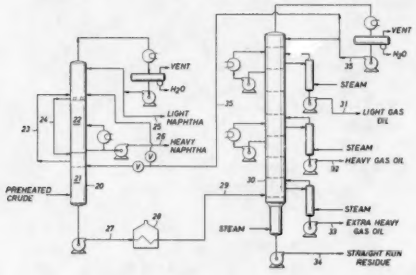
wherein a and c are numbers in the range of 1 to 16, with the sum of a and c being in the range of 2 to 32, and b is a number in the range of 2 to 30, and

(g) the basic compound is selected from the group consisting of alkali metal hydroxides and alkali metal carbonates.

4,274,944
FRACTIONATION PROCESS

Robert P. Bannon, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1979, Ser. No. 106,340
Int. Cl.[3] B01D *3/06*; C10G *7/00*
U.S. Cl. 208—352 2 Claims



1. A process for fractionating crude oil which comprises:

(a) passing a crude oil feed stream into the flasher section of a first fractional distillation column, the fractional distillation column comprising said flasher section and a segregated naphtha splitter section, under conditions in said flasher section effective to fractionate said crude oil feed stream into a rectified vapor and a flashed crude bottoms;

(b) passing rectified vapor from the flasher section to an intermediate location in the naphtha splitter section and fractionally distilling said vapor under conditions effective to produce a light naphtha fraction, a heavy naphtha fraction, and a reflux liquid which is returned to the flasher section;

(c) passing the flashed crude bottoms to a second fractional distillation column and fractionally distilling said flashed crude bottoms to produce a product mix comprising a naphtha fraction, a gas oil, and residue; and

(d) passing at least the bulk of said naphtha fraction to said flasher section of said first fractional distillation column.

4,274,945
IRON ORE BENEFICIATION BY SELECTIVE FLOCCULATION

Richard M. Goodman, Norwalk, and Hans P. Panzer, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

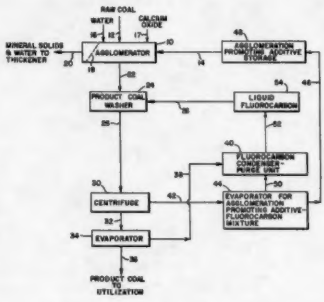
Filed Nov. 7, 1979, Ser. No. 92,002
Int. Cl.[3] B03B *1/04*
U.S. Cl. 209—5 5 Claims

1. A process of selective flocculation for iron ore values wherein a ground iron ore containing siliceous gangue is first dispersed in an aqueous medium and thereafter conditioned with an effective amount of a selective flocculant thereby selectively flocculating the iron-containing particles without causing a corresponding flocculation of the siliceous gangue wherein said selective flocculant is a partially carboxylated polyacrylamide containing from about 35 to 55 percent carboxyl groups and of a molecular weight in excess of one million.

4,274,946
AGGLOMERATION TYPE COAL RECOVERY PROCESSES

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Otisca Industries, Ltd., Syracuse, N.Y.

Continuation-in-part of Ser. No. 814,040, Jul. 8, 1977, which is a division of Ser. No. 662,888, Mar. 1, 1976, Pat. No. 4,055,480, which is a continuation-in-part of Ser. No. 460,558, Apr. 12, 1974, Pat. No. 3,941,679. This application May 21, 1979, Ser. No. 41,063
Int. Cl.[3] B03B *1/04, 7/00*
U.S. Cl. 209—5 12 Claims

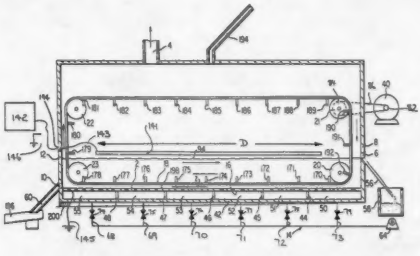


1. A process for recovering coal from a particulate composite in which said coal is associated with mineral matter, said process comprising the steps of: treating said composite in an aqueous carrier with a non-aqueous, organic agglomeration promoting additive with respect to which the coal is hydrophobic to effect a coalescence of the coal particles into product coal agglomerates and the ejection of mineral matter into dispersion in said aqueous carrier; recovering said product coal agglomerates from said aqueous carrier; and washing said product coal agglomerates with a fluorocarbon in which said additive is soluble to thereby effect a recovery of said agglomeration promoting additive from said product coal agglomerates.

4,274,947
ELECTROSTATIC METHOD AND APPARATUS FOR SORTING FLUIDIZED PARTICULATE MATERIAL

Jan M. Beeckmans, 856 Wellington St., London, Ontario, Canada (N6A 3S7), and Ion I. Inculet, 81 Lloyd Manor Crescent, London, Ontario, Canada (N6H 3Z4)

Filed Jan. 14, 1980, Ser. No. 112,084
Int. Cl.[3] B03C *7/04*
U.S. Cl. 209—12 12 Claims



1. A method of sorting fluidized particulate material which comprises:

(a) feeding particulate material to an elongated horizontally

extending container having a gas permeable base and at least a major, intermediate lengthwise extending portion of the interior thereof unobstructed by the container for the flow of particulate material towards both a first end and a second end thereof for fluidized material above the gas permeable base.

(b) fluidizing a bed of the particulate material in the container, and thereby tribo-electrically charging particles in said bed,

(c) generating a vertical electrostatic field across said bed between a pair of vertically spaced electrodes to attract in the upper strata of the bed particles whose tribo charges are opposite in polarity to the upper of said electrodes, and cause an enrichment of such particles in an upper portion of the bed,

(d) generating a recirculatory motion of particles in said bed so that an upper portion of the fluidized bed is moved towards a first end while a lower portion of the fluidized bed is moved towards a second end thereby causing a progressing enrichment of the fluidized bed in particles which are tribocharged to a polarity opposite to the polarity of said electrode towards the first end with reflux of particles therefrom, and a progressive enrichment of the fluidized bed in particles of opposite polarity towards the second end, with reflux of particles therefrom.

(e) removing the particulate material from the first end, and

(f) removing particulate material from the second end.

4. A fluidized particulate material sorting apparatus, comprising:

(a) a particulate material fluidizing container which is elongated in a horizontal direction and has a base which is gas permeable over substantially the whole area for fluidized particulate material above the gas permeable base, at least a major, intermediate lengthwise extending portion of the interior being unobstructed by the container for the flow of fluidized particulate material therealong, said container having an upper gas outlet,

(b) means for feeding particulate material to the container,

(c) means for removing particulate material from a first end of the container,

(d) means for removing particulate material from a second, end of the container opposite said first end,

(e) means for feeding pressurized gas to substantially the whole area of the underside of the base,

(f) drive means within said container and operable to generate a recirculatory motion of particles in said bed so that an upper portion of the fluidized bed is moved toward said first end while a lower portion of the fluidized bed is moved toward said second end.

(g) a pair of spaced electrodes, lying generally parallel to said base and connectible to means to generate a potential difference across said electrodes, whereby in operation, the recirculatory motion of particulate material and the potential difference across said electrodes causes a progressive enrichment of the fluidized bed in particles which are tribocharged to one polarity towards the first end, with reflux of particles therefrom, and a progressive enrichment of the fluidized bed in particles of opposite polarity towards the second end, with reflux of particles therefrom.

4,274,948

SEPARATION OF MINERALS

Lee F. Robinson, London, England, assignor to RTL Contactor Holding S.A., Switzerland

Filed Aug. 10, 1979, Ser. No. 65,432

Claims priority, application United Kingdom, Aug. 11, 1978, 33125/78

Int. Cl.³ B03B *1/00, 9/02*

U.S. Cl. 209—9 **9 Claims**

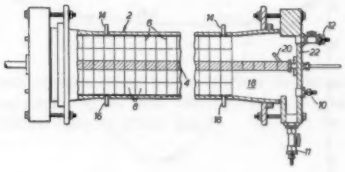
1. A continuous process for the separation of solid impurities from an aqueous phase selected from aqueous slurries, dispersions and suspensions, comprising:

providing a multi-compartment rotary contactor;

passing a stream of said aqueous phase through said contactor;

separately passing through said contactor a stream of an organic phase comprising a non-polar organic liquid;

supplying the contactor with a collector reagent so as to be present during at least a part of the passage of the streams through the contactor, whereby the impurities are given a hydrophobic surface;



contacting the phases in the contactor by continuously bringing the aqueous and solvent phases into contact with one another while maintaining an interface between an upper and a lower of the two phases, whereby the impurities collect at the interface;

removing the two phases from the contactor; and

independently removing the interfacial layer containing at least a proportion of the impurities initially present in the aqueous phase.

4,274,949

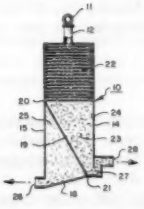
FROTH SEPARATION APPARATUS

James R. McCarthy, c/o Coal Inc. 6417 Loisdale Rd., Springfield, Va. 22150

Filed Sep. 24, 1979, Ser. No. 78,591

Int. Cl.³ B03B *7/00;* **B03D** *1/14*

U.S. Cl. 209—17 **8 Claims**



1. A froth separation apparatus comprising a stationary separation container of generally rectangular form having two spaced generally vertical side walls, two spaced generally vertical end walls, a bottom wall and a top, influent feed means delivering a suspension of solids in liquid into the interior of said container at spaced points along the top of said container, a reagent inlet into the influent feed means ahead of said container, generally diagonal froth retention planar screen means extending across the separation container from end to end and from a line intermediate the top and bottom of one side wall to a line adjacent the bottom of the other side wall, froth creating means in said container above said screen means, froth discharge means on the said other side wall adjacent the bottom thereof and adjacent and above the screen means line adjacent the bottom of said other side wall for removal of froth and outlet means at the bottom of said one side for tailings discharge.

4,274,950

PROCESS FOR THE FLOTATION OF SULFIDE ORES

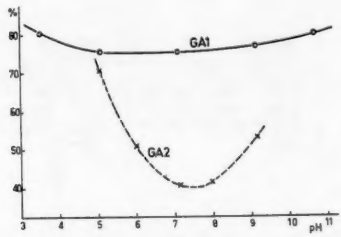
Etienne Larribau, Lons, and Pierre Tozzolino, Pau, both of France, assignors to Societe Nationale Elf Aquitaine (Production), France

Filed Jun. 25, 1979, Ser. No. 51,905

Claims priority, application France, Jun. 27, 1978, 78 19121; Jun. 8, 1979, 79 14692

Int. Cl.³ B03D *1/02*

U.S. Cl. 209—166 **8 Claims**



1. A process of flotation of sulphide minerals, by using 10 to 500 ppm of a collector comprising a thio-organic compound, with respect to the weight of the mineral to be flotated, wherein the collector is an organic sulfide of the type R—S—$(CH_2)_n$—OH, in which R is a C_xH_y hydrocarbon radical where x is an integer from 2–20 and y is an integer from 2–41 and in which n is an integer from 1–18.

4,274,951

ORE DRESSING PROCESS

Lionel A. Goold, Wadeville, South Africa, assignor to Trochem (PTY) Limited, Wadeville, South Africa

Filed Dec. 14, 1978, Ser. No. 23,447

Claims priority, application South Africa, Dec. 14, 1977, 77/7448; Aug. 4, 1978, 78/4434

Int. Cl.³ B03D *1/06*

U.S. Cl. 209—167 **9 Claims**

1. A froth flotation ore dressing process comprising forming a pulp of a phosphate-bearing ore, adding to said pulp a gangue depressant material comprising a guar gum ether of the formula

$$(R—O)_nG$$

wherein R is an acyclic hydrocarbon radical containing up to six carbon atoms or a cyclic hydrocarbon radical, O is oxygen, G is the guar moiety and n is an integer of one to nine, and subjecting the pulp to froth flotation to obtain a superior grade of phosphate than obtained in the absence of said guar gum ether.

4,274,952

APPARATUS FOR SEPARATING SOLIDS FROM A SUSPENSION

Reinhard Hanke, Leoben, and Kornel Jahn, Vienna, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 29, 1979, Ser. No. 89,240

Claims priority, application Austria, Oct. 7, 1978, 7941/78

Int. Cl.³ B07B *1/06*

U.S. Cl. 209—273 **3 Claims**

1. Apparatus for separating solids from a suspension, comprising

(a) a housing,

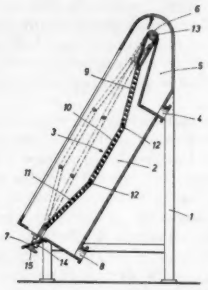
(b) a sieve chain disposed in said housing and having an upper end and a lower end, the suspension containing the solids flowing over said seive chain in a general direction from said upper end to said lower end and the sieve chain being comprised of

(1) a plurality of sieve sections and

(2) hinge means connecting adjacent ones of said seive sections in series from one end to the other end, each sieve section having an inclination in the general direction extending from said upper end to said lower end and consisting of a plurality of sieve bars extending transversely to said general direction and said hinge means, the sieve bars defining sieve gaps therebetween,

(c) a hinge connecting one of said sieve chain ends to said housing, and

(d) an adjusting device hingedly connecting the other one of said sieve chain ends to said housing.



4,274,953

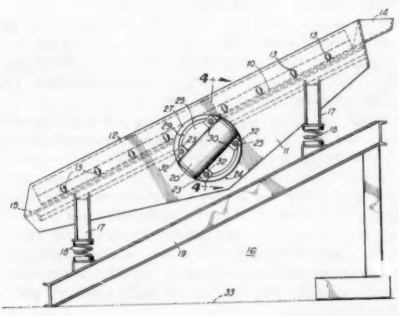
VIBRATING SCREEN SEPARATOR

Allen S. Jackson, Atlanta, Ga., assignor to J & H Equipment, Inc., Roswell, Ga.

Filed May 27, 1980, Ser. No. 153,454

Int. Cl.³ B07B *1/38, 1/42*

U.S. Cl. 209—326 **3 Claims**



1. A vibrating screen separator comprising a vibrating screen assembly having a material inlet and outlet, resilient means supporting the screen assembly for vibratory movement, a vibration motor on the exterior of each opposite side of the screen assembly in opposed alignment with the other vibration motor, and an adjustable and lockable rotational mounting for each vibration motor on each side of the screen assembly whereby each vibration motor is independently rotatable in opposite directions through a full circle of rotation relative to the other vibration motor, and each rotational mounting comprising a disc and a surrounding concentric ring fixed to one side of the screen assembly and defining between them a continuous annular passage, and at least a pair of spaced threaded

fasteners carried by each vibration motor and extending into said annular passage and adapted to move through the passage in either direction circumferentially, said threaded fasteners adapted to be clampingly locked in selected adjusted positions relative to the annular passage.

4,274,954

MICROBIOLOGICAL PROCESS FOR REMOVING NON-IONIC SURFACE ACTIVE AGENTS, DETERGENTS AND THE LIKE FROM WASTEWATER

James E. Blair, Roanoke, Va., assignor to Sybron Corporation, Rochester, N.Y.

Filed May 1, 1979, Ser. No. 35,045
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—611 **4 Claims**

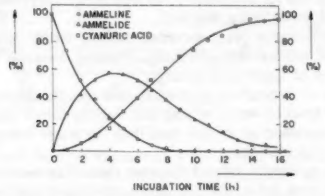
1. A process for removing anionic and/or nonionic surface active agents, and detergents from wastewater containing the same comprising treating wastewater containing the anionic and/or nonionic surface active agents, detergents and the like compounds with *Pseudomonas fluorescens* 3P, ATCC-31483, under aerobic conditions.

4,274,955

PROCESS FOR THE DEGRADATION OF CYANURIC ACID

Josef Zeyer, Zürich; Ralf Hütter, Gockhausen, and Peter Mayer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 6, 1979, Ser. No. 46,123
Claims priority, application Switzerland, Jun. 15, 1978, 6532/78
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—612 **11 Claims**



1. A microbial process for the degradation of cyanuric acid in waste water containing cyanuric acid, in which process the waste water containing cyanuric acid is brought into contact, under aerobic conditions, with cultures of fungi of the *Sporothrix schenkii* species.

4,274,956

EXTRACTION PROCESS USING SOLID STABILIZED EMULSIONS

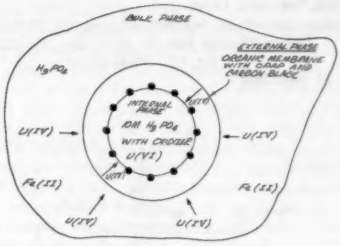
Robert D. Stewart, Yorba Linda, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jan. 10, 1979, Ser. No. 2,481
Int. Cl.³ B01D *11/00*
U.S. Cl. 210—638 **17 Claims**

14. An extraction process which comprises:

(a) forming an emulsion of an aqueous solution phase containing at least one species to be extracted in an immiscible organic phase containing an extractant selective to such species and at least one insoluble particulate solid selected from the group consisting of fumed silica and carbon black which is substantially nonreactive with respect to constituents in each of such phases in an amount sufficient to form an emulsion of an internal aqueous phase containing said species and surrounded by an external organic phase containing said particulate solids;

(b) combining the formed emulsion with an aqueous bulk phase for a time sufficient to enable extraction of the species by the extractant of external solids-containing organic phase and transfer of the extracted species to the



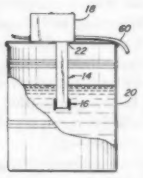
bulk aqueous phase but insufficient for transfer of the extracted species from the bulk aqueous phase to the internal aqueous phase.

4,274,957

SKIMMER HAVING A WIDE DRIVE ROLLER, A GUIDE MEANS, AND A TENSION MEANS

Joseph A. Koller, 1900 Old Willow Rd., Northfield, Ill. 60093

Filed Mar. 7, 1977, Ser. No. 775,195
Int. Cl.³ B01D *57/00, 43/00*
U.S. Cl. 210—172 **9 Claims**



1. Skimming apparatus for removing a first liquid from a second liquid on which it is floating, comprising

a drive roller mounted for rotation about a substantially horizontal axis,

an endless belt having an outer surface preferentially wettable by said first liquid,

said belt extending over said roller and depending into said first liquid.

the width of said drive roller being greater than the width of said belt,

drive means for rotating said roller to drive said belt upwardly over said roller and downwardly into said liquid,

a second roller mounted above and in parallel relationship with said drive roller,

said second roller being urged downwardly against said belt toward the downwardly traveling surface of the upper portion of said drive roller to squeeze said first liquid from said belt and to provide a trough in which said first liquid squeezed from the surface of said belt is retained,

means for guiding said belt away from the edges of said drive roller to provide exposed end portions of said roller, whereby liquid may flow from said trough onto said exposed end portions of said roller, and

collector means mounted below said drive roller for collecting said first liquid which flows out of said trough onto said exposed end portions of said drive roller.

4,274,958

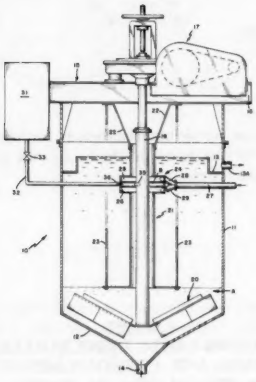
FLOCCULANT DISTRIBUTOR MEANS FOR FEEDWELL

Elliot B. Fitch, Auburn, Ala., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation of Ser. No. 949,485, Oct. 10, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,309

Int. Cl.[3] B01D *21/16*

U.S. Cl. 210—208 3 Claims



1. A settling tank which comprises in combination, feed supply means for delivering an influent feed suspension to the tank, overflow means for clarified liquor separated from the influent feed, a settled solids collecting zone at the bottom of the tank provided with settled solids discharge means, a movable rake structure for moving settled solids to said discharge means, and a feedwell for receiving the influent feed suspension, said feedwell comprising:

(a) a vertical hollow column arranged at the center of the tank and open at the bottom thereof to said settled solids collecting zone,

(b) a cylindrical feedwell located adjacent the top of said column spaced from said settled solids collecting zone and including vertically spaced upper and lower cylindrical channels located about the periphery of said column and open to the longitudinal axis of said column,

(c) influent feed inlet means for introducing the influent feed to said feedwell and including a feed pipe having branch feed pipes for splitting and tangentially directing like feed streams into said spaced upper and lower channels of said feedwell for rotation in respective clockwise and counterclockwise paths for discharge and remerging inwardly in a transverse zone of shear within an area of said feedwell surrounded and peripherally defined by said upper and lower channels, whereat the energy of the feed streams is converted into random turbulence and the energy of the influent feed is dissipated,

(d) a flocculant dispersing means provided in said feedwell comprising a third cylindrical channel about the periphery of said column and having a discharge into said feedwell and arranged at a location interposed between said vertically spaced upper and lower channels, a feed inlet to said third channel for dispersing a preselected dosage of diluted flocculant to said channel for discharge therefrom directly into said zone of shear for mixing with said remerged feed stream prior to its discharge from said feedwell.

4,274,959

APPARATUS FOR DISSOLVING AIR IN WATER AND SUBSEQUENT REDUCTION OF THE WATER SURFACE TENSION IN FLOTATION SYSTEMS

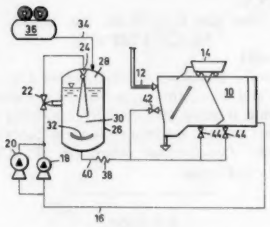
Hanns E. Roediger, Stuttgart, Fed. Rep. of Germany, assignor to Techtransfer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,490

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835709

Int. Cl.[3] C02F *1/24*

U.S. Cl. 210—221.2 4 Claims



1. An apparatus for the saturation dissolving of pressurized air in water and for thereafter discharging said air saturated water into a flotation basin containing contaminated waste water and sludge through pressure reducing valves to reduce the surface tension of the waste water and float sludge particles to the surface for skimming, said apparatus comprising:

(a) a pressure tank (**26**) containing water and compressed air thereabove,

(b) an ejector (**24**) having an inlet for supplying water to said tank and for simultaneously aspirating compressed air into said water being supplied,

(c) said ejector being mounted entirely within said pressure tank and having a discharge opening disposed below the level of water in said tank,

(d) an air aspiration opening in said ejector disposed above the level of water in said tank for the direct education of compressed air in said tank into the water being supplied by said ejector,

(e) an upwardly curved diverter plate (**32**) mounted within said tank below the discharge opening of said ejector for the swirling deflection of water and aspirated air supplied thereby,

(f) a flotation basin (**10**),

(g) conduit means (**16**) including pressure pump and control valve means for supplying water directly from the flotation basin to the inlet of said ejector, and

(h) a diverting device (**46**) mounted within the flotation basin spaced from an outlet (**42**) in a side wall of the basin for adding the air saturated water into the basin for deflecting said water upwardly towards an inlet (**12**) for waste and sludge disposed above said outlet,

(i) said diverting device being disposed at an angle such that the distance between it and said side wall of the basin (**10**) increases in an upwardly direction.

4,274,960

FILTER MEANS

Tage Abrahamsson, Skövde, Sweden, assignor to Metzeler AB, Tibro, Sweden

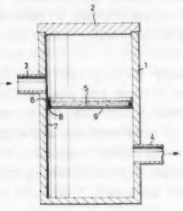
Continuation of Ser. No. 13,533, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 842,892, Oct. 17, 1977, abandoned. This application Nov. 26, 1979, Ser. No. 97,888

Int. Cl.[3] B01D *23/02, 29/08*

U.S. Cl. 210—221.1 5 Claims

1. A filter means for separating particles of oil from waste water, said means comprising a housing having an inlet and an outlet and at least one filter element arranged between said inlet and said outlet, characterized in that the filter element

comprises a self-supporting body comprising small pieces of a soft foamed plastics material having open cells, which material has been chopped and been subjected to mechanical non-distintegrating pressure shocks of a magnitude sufficient to rupture

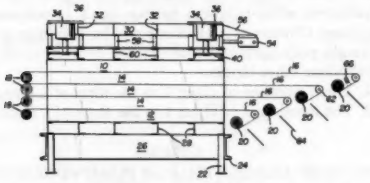


a substantial portion of the cell walls, whereafter the pieces of foamed plastics material have been joined together under pressure by means of a binding agent, said filter element having a bulk density of from 40 to 250 kg/m^3.

4,274,961
PRESSURE FILTER

Gene Hirs, 6865 Meadow Lake Dr., Birmingham, Mich. 48010

Continuation-in-part of Ser. No. 739,755, Nov. 5, 1976, Pat. No. 4,230,572. This application Oct. 17, 1979, Ser. No. 85,657
Int. Cl.^{3} B01D *25/32*
U.S. Cl. 210—225 **5 Claims**



1. In a liquid filtering apparatus of the pressure type having a plurality of vertically superimposed and vertically separable shells, including a top shell, at least one intermediate shell and a bottom shell; an individual filter media belt horizontally interposed between each adjacent shell pair, said filter media being imperforate to contaminant particles and perforate to liquid; each pair of adjacent shells and its interposed filter media defining one of a plurality of independent and parallel-connected filters; each shell having side walls which are imperforate to liquid; said top shell having a top surface which is imperforate to liquid, an open bottom and an inlet for receiving particle-contaminated pressurized liquid from a source; each of said intermediate shells having a horizontal impervious wall subdividing such shell into an open-topped upper chamber and an open-bottomed lower chamber, each upper chamber having an outlet through which filter liquid which has passed downwardly from the adjacent upper shell through the interposed filter media and the open top may be removed from the apparatus, and each lower chamber having an inlet for receiving particle-contaminated pressurized liquid from said source, which liquid may then flow downwardly through the open bottom and interposed filter media into the open top of the next adjacent lower shell; said bottom shell having an open top, a bottom surface which is impervious to liquid and an outlet through which filtrate liquid which has passed downwardly from the adjacent intermediate shell through the interposed filter media may be removed from the apparatus; each adjacent pair of said shells having opposed aligned peripheral surfaces provided with sealing means to selectively seal the interior of said shells from the exterior when the shells are in adjacent proximity for filtration; the improvement which comprises:

shell positioning means for vertically separating each shell from its adjacent shell to permit each of said filter media belts to be indexed for discharge of sludge outside of said shells, no more than one of said shells remaining fixed during said shell separating step;

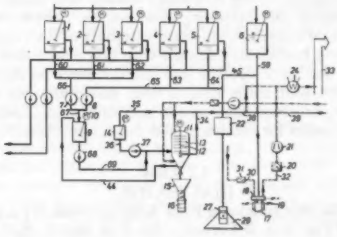
each of said filter media belts extending between its own pair of supply and take-up rolls, the supply and take-up rolls for each filter media belt being located at and secured to opposite ends of one of the shell pairs between which each respective filter media belt is interposed, whereby said filter media belt rolls move vertically to the same extent as the shells to which they are secured also move vertically;

and frictional drive means comprising a power-driven endless loop cable which frictionally engages cable-receiving means associated with a plurality of supply-take-up roll pairs for causing the associated filter media belts to index from said supply rolls to said take-up rolls to convey sludge accreted thereon out of said shells for discharge thereof, and thereafter causing a return indexing of said filter media belts along the same paths to their respective starting positions to resume filtration after said shells are brought back together by said shell positioning means.

4,274,962
APPARATUS FOR TREATING RADIOACTIVE CONCENTRATES

Horst Queiser, Maintal, and Othmar Meichsner, Raunheim, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mühlheim, Fed. Rep. of Germany

Filed Feb. 4, 1976, Ser. No. 655,249
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1975, 2515795
Int. Cl.^{3} C02F *9/00*
U.S. Cl. 210—257.1 **6 Claims**



1. Apparatus for treating various radioactive concentrates having a liquid component: including a plurality of filter concentrate containers, an evaporator concentrate container, an intermediate storage container connected to the filler concentrate containers and to the evaporator concentrate container, a filter-cake-producing filter connected to the intermediate storage vessel for receiving concentrate therefrom, a storage drum having a fill opening and being connected to the filter concentrate containers and evaporator concentrate container via a metering vessel, a filling device between the storage drum and metering vessel for filling the storage drum, said filling device comprising a movable fill pipe, and a collecting vessel below the fill pipe and next to the fill opening in the storage drum, said movable fill pipe being movable between said collecting vessel and the fill opening in the storage drum.

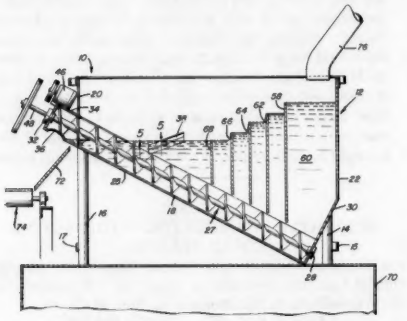
4,274,963
SOLIDS AND LIQUID SEPARATING APPARATUS

Robert D. Purvis, Rte. 1, Box 54, Sidney, Mont. 59270

Filed Feb. 14, 1979, Ser. No. 12,225
Int. Cl.^{3} B01D *43/00*
U.S. Cl. 210—320 **3 Claims**

1. An apparatus for separating solid drilling bit cuttings from

drilling mud, said apparatus including a horizontally elongated container defining inlet and outlet ends and an inclined bottom extending between said ends, said bottom being V-shaped in transverse cross section and having its lower end disposed at said inlet end and its higher end disposed at said outlet end, an elongated inclined conveyor disposed in and paralleling the apex of said bottom, said apex of said bottom including a solid cuttings outlet in the upper end thereof to which said conveyor is operative to upwardly convey solid cuttings gravitating downwardly into said apex, said container including a mud outlet spaced below the level of said solid cuttings outlet, a plurality of upstanding transverse weir baffles mounted in said



container and laterally spaced apart longitudinally of the inlet end of said container, said mud outlet being spaced longitudinally of said container between said solid cuttings outlet and the adjacent weir baffles, said weir baffles extending upwardly to progressively lower elevations toward said outlet end of said container and extending downwardly therein to levels adjacent said conveyor, the upper extremity of the lowest weir baffle being horizontally aligned with said mud outlet, a well mud line discharge opening into said container on the side of the highest weir baffle remote from said outlet end of said container, and mud tank means operatively associated with said mud outlet for receiving mud discharged therefrom.

4,274,964

DIALYSATOR

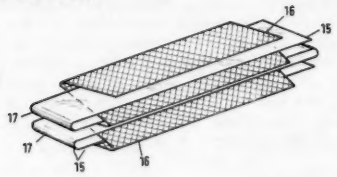
Gerd Krick, Bad Homburg; Peter Konang, Frankfurt am Main, both of Fed. Rep. of Germany; Jan-Erik Sigdell, Basel, Switzerland, and Klaus Heilmann, Friedrichsdorf, Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,075

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836192

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **8 Claims**



1. A method for producing a multilayer dialyzer having folded layers of a flattened membrane hose alternating with layers of netting wherein the folded membrane hose layers are embedded in a sealer and then opened at the creases to provide hose sections with open ends held together by said sealer, said open ends providing access for a liquid into said hose sections, and wherein said netting layers are interposed between adjacent hose sections which define spaces for another liquid, comprising the following steps:

(a) providing a substantially continuous length of said membrane hose with spacer means inside the hose to space the hose walls from each other by said spacer means,

(b) providing a substantially continuous length of said netting,

(c) simultaneously folding said membrane hose with the spacer means therein and said netting in the directions which cross each other (**15**, **16**) whereby said alternating arrangement of hose sections and netting layers is formed and whereby the hose sections and netting layers are located in a mutually interlocking manner,

(d) providing the hose ends with said sealer and curing the sealer,

(e) opening the hose sections to provide said open hose ends, and

(f) removing said spacer means out of the open hose ends.

7. A dialyzer produced by the steps of claim **1**.

4,274,965

LACTAM TERPOLYMER MEMBRANES

Joseph A. Carden, Jr., Durham, and Ray McKinney, Jr., Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 913,175, Jun. 6, 1978, Pat. No. 4,181,606. This application Jun. 27, 1979, Ser. No. 52,381

Int. Cl.³ B01D *13/00, 31/00*

U.S. Cl. 210—500.2 **17 Claims**

1. A permselective membrane comprising a caprolactam-polyalkylene ether-polyacyl lactam block terpolymer of at least about 10 microns in thickness and having from 35 to 75% by weight polycaprolactam blocks and from 25 to 65 percent polyalkylene ether blocks.

12. The membrane of claim **1** in the form of a planar film.

13. The membrane of claim **1** in the form of a hollow fiber.

4,274,966

METHOD AND DEVICE FOR PURIFYING SEWAGE

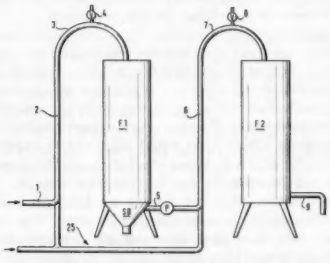
Willy F. Palmer, Von Vollmerstrasse 33, D 8160 Miesbach, Fed. Rep. of Germany

PCT No. PCT/DE78/00023, § 371 Date May 17, 1979, § 102(e) Date May 17, 1979, PCT Pub. No. WO79/00128, PCT Pub. Date Mar. 22, 1979

This PCT application filed May 17, 1979, Ser. No. 63,562

Int. Cl.³ C02F *3/10*

U.S. Cl. 210—618 **43 Claims**



13. A method of passing sewage water from a presettling basin through a filter system closed to atmosphere for purification of said water comprising:

feeding said water into an ascending pipe means having a portion thereof filled with packings for at least biological purification of said water,

introducing oxygen under pressure into said pipe means adjacent the lower end thereof for mixing with said water upstream of said packing portion,

supplying said water from said pipe means directly to a filter body container wherein said water passes through a series of filtration means including sieve devices, packings for mechanical purification of said water, and materials for biological purification of said water,

discharging said water from said filter body container directly into a further ascending pipe means having a further portion thereof filled with packings for at least biological purification of said water,

introducing oxygen under pressure into said further pipe means for mixing with said water,

supplying said water from said further pipe means directly to a further filter body container wherein said water passes through a series of further filtration means for at least mechanical and biological purification of said water, and

passing said water through said filter system in a continuous flow fashion such that said water does not settle in said filter system.

4,274,967

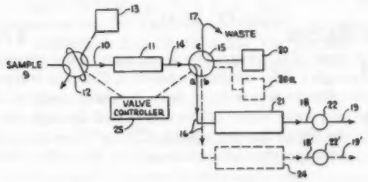
CHROMATOGRAPHIC APPARATUS AND METHOD

Lloyd R. Snyder, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 922,712, Jul. 7, 1978, Pat. No. 4,204,952, and Ser. No. 77,420, Sep. 20, 1979. This application Nov. 26, 1979, Ser. No. 97,463

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—659 **14 Claims**



1. A method of increasing the throughput and separation power of a chromatographic system, which system is operated and fed a series of samples, each sample containing at least one particular constituent of interest, said method comprising the steps of:

(a) periodically passing a series of samples at a first controlled rate into a first chromatographic column for the purpose of separating a particular constituent of interest from each of said samples;

(b) obtaining eluant materials for each sample passing from said first chromatographic column and retaining in said chromatographic system only that fraction of each sample containing said particular constituent of interest;

(c) periodically passing the retained fraction of each sample into a second chromatographic column at a second controlled rate, said first controlled rate being in substantial synchronism with said second controlled rate;

(d) relating said first and said second controlled rates to provide sufficient separation between the particular constituent of interest of said sample fractions leaving said second chromatographic column and to provide that a number of sample fractions are concurrently passing through said second chromatographic column; and

(e) passing said sample fractions leaving said second column through at least one additional chromatographic column to recycle said sample fractions and effect a greater separation of constituents in each of said sample fractions.

4,274,968

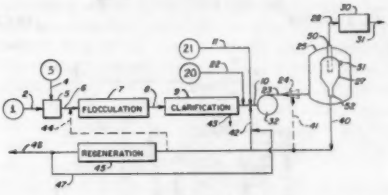
PROCESS FOR THE PURIFICATION OF WATER

James F. Grutsch, Hammond; Russell C. Mallatt, Crown Point, both of Ind., and Joe D. Walk, Homewood, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 15, 1977, Ser. No. 806,750

Int. Cl.³ C02F *1/28*

U.S. Cl. 210—666 **26 Claims**



1. A process of water treatment to produce potable water comprising:

adding an effective amount of chemical flocculant to the feed water and subjecting said water to flocculation;

passing the flocculated water to a clarifier or filter where suspended solids are separated from the partially purified water;

adding about 1 to about 100 parts powdered activated carbon per million parts of water from the clarifier or filter;

contacting the water with said carbon in a reaction zone so as to achieve substantial reduction of contaminants in the water;

separating the activated carbon from the purified water; and

recycling a portion of the separated activated carbon to the clarifier or filter effluent.

26. An apparatus for the treatment of water comprising:

an outer vessel having an inlet so that water and activated carbon or activated sludge can enter; and

a cyclone separator disposed within said outer vessel, said cyclone separator having approximately a cylindrical configuration having a top and bottom, the cyclone separator sides slanting inwardly at the bottom forming a conical configuration, said cyclone separator having at least one entry port near the top so that water can enter the separator near the top of the separator and form a spiraling flow pattern within the cyclone, said cyclone having an exit port near the bottom of the cyclone for removing separated activated carbon or sludge, and said cyclone having an exit port extending through the cyclone near the top to a central portion of the separator between the top and bottom so that separated water can be removed from the cyclone separator.

4,274,969

PROCESS FOR TREATING WASTE WATER FROM PROPYLENE OXIDATION PLANTS

Jean-Claude Lecoq, Chaponost, and Edouard Grimaud, Saint-Genis-Laval, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Oct. 30, 1979, Ser. No. 89,507

Claims priority, application France, Nov. 14, 1978, 78 32088

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—721 **7 Claims**

1. A process for treating unsaturated compound-containing waste water from plants for the production of acrylic derivatives, said waste water containing acrylic monomers, which process comprises polymerizing the unsaturated compounds in the waste water at a temperature between 20° and 150° C. while adding a peroxygen compound in an amount of from about 1 to 50% based on the weight of acrylic monomers, neutralizing the waste water with a reagent producing polyvalent metal ions to form insoluble salts of the polymerized compounds, and separating from the liquid the insoluble salts of

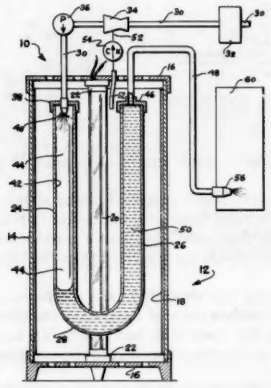
polymerized compounds so formed to reduce the chemical oxygen demand (COD) of the waste water.

4,274,970

METHOD AND APPARATUS FOR TREATING WATER

Stuart W. Beitzel, 1480 Cabrillo Park Dr., #A, Santa Ana, Calif. 92701

Filed Oct. 29, 1979, Ser. No. 89,140
Int. Cl.³ C02F *1/32, 1/78*
U.S. Cl. 210—748 **18 Claims**



1. A method for treating water so as to kill microorganisms within said water and so as to oxidize oxidizable material within said water which comprises:

passing a thin film of water downwardly along an interior wall of a vertically extending first container in contact with a gaseous body maintained therein containing a gas reactant selected from the group consisting of oxygen, ozone and mixtures thereof while exposing both said film and said gaseous body to ultraviolet radiation of a frequency and of an intensity capable of causing the formation of ozone and killing microorganisms, said first container being substantially transparent to said untraviolet radiation,

said film being sufficiently thin to enable substantially all of said water within said film to be in contact with said gaseous body during movement of said film in contact with said gaseous body said film is formed by directing said water against an upper portion of said interior wall, said interior wall being of such a character that said water directed toward it adheres to said wall as a result of surface tension and moves downwardly along said interior wall as a result of the action of gravity,

collecting the water from within said film which has been in contact with said gaseous body at the bottom of said first container and passing said collected water in a body within a second container said gaseous body is maintained within said first container by restricting the flow of water through said containers,

exposing said body of water in said second container to ultraviolet radiation of a frequency and of an intensity capable of causing the formation of ozone and killing microorganisms while moving said water within said body under turbulent conditions sufficient to continuously mix with water within said liquid body, said second container being substantially transparent to said ultraviolet radiation.

9. An apparatus for treating water so as to kill microorganisms and so as to oxidize oxidizable material within said water which comprises:

first and second elongated, tubular containers, each of said containers having a top and a bottom and being substantially transparent to ultraviolet radiation,

connecting means placing the bottoms of said containers in liquid communication with one another,

inlet means for enclosing the top of said first container and for passing a stream of water into the top of said first container so that said stream of water forms a thin film of water along an interior wall within said first container which will pass downwardly toward the bottom of said first container through the action of gravity,

outlet means located at the top of said second container for creating a back pressure sufficient to retain a body of water within said second container and within said connecting means and a gaseous body in said first container,

a single ultraviolet radiation source means located adjacent to both of said containers and extending along the lengths of both of said containers for producing ultraviolet radiation of a frequency and of an intensity capable of causing the formation of ozone and killing microorganisms for exposing gas from said gaseous body trapped within said first container between the top and the bottom thereof and a film of water against said wall within said first container to ultraviolet radiation, and for exposing a body of water within said second container to ultraviolet radiation.

4,274,971

FILTRATION PROCESS USING POLYOLEFIN FIBRIDS AS FILTER AIDS

Edmund Hartinger, Baden; Elias Jülke, Wettingen, and Harald Sandmann, Nussbaumen, all of Switzerland, assignors to Maschinenfabrik Meyer AG, Switzerland

Filed Apr. 18, 1980, Ser. No. 141,352
Claims priority, application Switzerland, May 14, 1979, 4449/79
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—778 **5 Claims**

1. A process of filtering waste water comprising passing said water through a filter medium wherein a filter aid comprising polyolefin fibrids which have been rendered hydrophilic is added to said waste water before it is passed through the filter medium, the fibrids having a mean CFL of from about 0.5 to 2.5 mm., and a specific surface area of from about 5 to 10 m^2/g.

4,274,972

PROCESS FOR PREPARING DILUTE AQUEOUS COPPER ZIRCONIUM AMMONIUM CARBONATE SOLUTIONS CONTAINING LESS THAN ABOUT 0.5% CU AND 1.5% ZRO_2

Sherif A. Sherif, Ewing Township, Mercer County, and James E. Hachtmann, High Bridge, both of N.J., assignors to Magnesium Elektron Inc., Flemington, N.J.

Division of Ser. No. 5,412, Jan. 22, 1979, Pat. No. 4,200,672.
This application Oct. 12, 1979, Ser. No. 84,227
Int. Cl.³ D06M *13/50*
U.S. Cl. 252—8.6 **7 Claims**

1. A process for preparing dilute aqueous copper zirconium ammonium carbonate solutions containing less than about 0.5% Cu and 1.5% ZrO_2, having a Cu:Zr atomic ratio within the range from about 0.5:1 to 1:1 and having an enhanced resistance to gelation and the formation of precipitates, upon storage at atmospheric temperatures, which comprises mixing aqueous solutions of ammonium copper carbonate and ammonium zirconyl carbonate in proportions selected to form copper zirconium ammonium carbonate in solution in water in a concentration within the range from about 0.1% to about 0.5% Cu, and an amount sufficient to inhibit gelation and precipitation of a vicinal diol compound having the general formula:

$$R_1—CHOH—CHOH—R_2$$

wherein R_1 and R_2 are selected from the group consisting of (1) carboxylic acids groups COOH and salts thereof COOM,

where M is a cation, and (2) organic groups having at least two up to about twelve carbon atoms and at least one OH group; provided, that when only one of R_1 and R_2 is a carboxylic acid group or salt thereof, the other of R_1 and R_2 is an organic group having at least two carbon atoms and two OH groups.

4,274,973

AQUEOUS WATER-SOLUBLE SOAP LUBRICANT CONCENTRATES AND AQUEOUS LUBRICANTS CONTAINING SAME

James H. Stanton, Grosse Ile, and Donald F. Garvin, Wyandotte, both of Mich., assignors to The Diversey Corporation, Northbrook, Ill.

Filed Jun. 22, 1979, Ser. No. 51,008

Int. Cl.[3] C10M *1/32, 1/06*

U.S. Cl. 252—34.7 **8 Claims**

1. In an aqueous water-soluble soap lubricant concentrate, the improvement comprising the inclusion therein of neodecanoic acid in amount from about 0.1 to 50.0 percent by weight of said concentrate.

2. An aqueous water-soluble soap lubricant concentrate comprising 2 to 40 percent by weight water-soluble fatty acid soap, about 0 to 15 percent by weight chelating agent, about 0 to 45 percent by weight surfactant, from 20 to 80 percent by weight water, and about 0.1 to 50.0 percent by weight neodecanoic acid.

7. A lubricating composition consisting essentially of the concentrate according to claim 2 and water in a volumetric proportion of concentrate to water of about 1:50 to about 1:500.

4,274,974

PRODUCTION OF DETERGENT COMPOSITIONS

Frederik J. Kerkhoven, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 219,180, Jan. 19, 1972, abandoned. This application Aug. 30, 1974, Ser. No. 501,956

Claims priority, application United Kingdom, Feb. 3, 1971, 3791/71

Int. Cl.[3] C11D *1/831, 3/075, 11/02, 17/06*

U.S. Cl. 252—90 **1 Claim**

1. A process for preparing a spray-dried detergent composition comprising by weight 5–80% of builders, 0–50% fillers and 5–60% of active detergent materials consisting essentially of a mixture of 20–80% by weight of anionic detergents of which 10–90% by weight is a fatty acid soap, and 80–20% by weight of nonionic detergents, which process comprises forming approximately equal proportions of at least two aqueous slurries A and B, slurry A being composed of a builder slurry incorporating therein an active detergent component consisting essentially of 60–100% by weight of anionic detergents and 0–40% by weight of nonionic detergents, slurry B being composed of a builder slurry incorporating therein an active detergent component consisting essentially of 0–40% by weight of anionic detergents and 60–100% by weight of nonionic detergents, simultaneously spray drying said slurries A and B in one spray-drying tower through separate nozzle systems, having points of entry on the tower at substantially equal height level of the tower, and collecting/mixing the dried products to form a homogeneous mixture of particulate material comprising said detergent composition.

4,274,975

DETERGENT COMPOSITION

John M. Corkill, Wyoming; Bryan L. Madison, Cincinnati, and Michael E. Burns, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 450,266, Mar. 11, 1974, which is a continuation-in-part of Ser. No. 359,293, May 11, 1973, abandoned. This application Aug. 20, 1979, Ser. No. 67,867

Int. Cl.[3] B01J *1/04;* **C02F** *1/42;* **C11D** *3/12, 3/14*

U.S. Cl. 252—140 **2 Claims**

1. A detergent composition for use as a scouring cleanser and capable of rapidly reducing the free polyvalent metal ion content of an aqueous solution, comprising:

(a) from about 25% to about 95% by weight of an abrasive;

(b) from about 10% to about 35% by weight of a water-insoluble crystalline aluminosilicate ion exchange material of the formula

$$Na_z[(AlO_2)_z\cdot(SiO_2)_y]\times H_2O$$

wherein z and y are integers of at least 6; the molar ratio of z to y is in the range from 1.0 to about 0.5, and x is an integer from about 15 to about 264; said aluminosilicate ion exchange material having a particle size diameter from about 0.1 micron to about 100 microns; a calcium ion exchange capacity on an anhydrous basis of at least about 200 milligrams equivalent of $CaCO_3$ hardness/gram; and a calcium ion exchange rate on an anhydrous basis of at least about 2 grains/gallon/minute/gram;

(c) from about 0% to about 20% by weight of an auxiliary builder salt selected from the group consisting of sodium tripolyphosphate, sodium carbonate, sodium bicarbonate, sodium silicate, sodium citrate, sodium oxydisuccinate, sodium mellitate, sodium nitrilotriacetate, sodium ethylenediaminetetraacetate, sodium polymaleate, sodium polyitaconate, sodium polymesaconate, sodium polyfumarate, sodium polyaconitate, sodium polycitraconate, sodium polymethylenemalonate, sodium carboxymethyloxymalonate, sodium carboxymethyloxysuccinate, sodium cis-cyclohexanehexacarboxylate, cis-cyclopentanetetracarboxylate, and sodium phloroglucinol trisulsulphonate; and

(d) from about 0.2% to about 10% by weight of a water soluble organic surface-active agent selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic surface-active agents and mixtures thereof.

4,274,976

TREATMENT OF HIGH LEVEL NUCLEAR REACTOR WASTES

Alfred E. Ringwood, Red Hill, Australia, assignor to The Australian National University, Australia

Filed Jul. 3, 1979, Ser. No. 54,957

Claims priority, application Australia, Jul. 14, 1978, PD5096; Nov. 17, 1978, PD6822

Int. Cl.[3] G21F *9/34*

U.S. Cl. 252—301.1 W **27 Claims**

1. A process for immobilising high level radioactive waste (HLW) calcine which comprises the steps of:

(1) mixing said HLW calcine in a minor proportion with a mixture of oxides, the oxides in said mixture and the relative proportions thereof being selected so as to form a mixture which, when heated and then cooled, crystallises to produce a mineral assemblage containing well-formed crystals capable of providing lattice sites in which elements of said HLW are securely bound, the crystals belonging to or possessing crystal structures closely related to crystals belonging to mineral classes which are resistant to leaching and alteration in appropriate geological environments and comprising crystals belonging to or possessing crystal structures closely related to at least two of the titanate mineral classes selected from the group consisting of perovskite ($CaTiO_3$), zirconolite ($CaZrTi_2O_7$) and hollandite-type ($BaAl_2Ti_6O_{16}$) mineral classes; and

(2) heating and then cooling said mixture so as to cause crystallisation of the mixture to a mineral assemblage having the elements of said HLW incorporated as solid solutions within the crystals thereof.

4,274,977

DEFOAMER PREPARATION AND PROCESSES FOR ITS PRODUCTION

Götz Koerner, and Hans-Ferdi Fink, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 931,893, Aug. 8, 1978, abandoned. This application Sep. 28, 1978, Ser. No. 946,642

Claims priority, application United Kingdom, Aug. 9, 1977, 33416/77

Int. Cl.[2] B01D *17/00*

U.S. Cl. 252—358 10 Claims

1. A defoamer composition comprising

(a) 40–90 parts by weight of a water-insoluble defoamer oil;

(b) 2–50 parts by weight of an emulsifier which is soluble in water and insoluble in component (a); and

(c) 3–20 parts by weight of a mixture of finely divided hydrophobic and hydrophilic silica.

4,274,978

STANDARDS FOR DETERMINING GLYCOSYLATED HEMOGLOBIN

Edwin G. Moore, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 7, 1979, Ser. No. 101,341

Int. Cl.[3] G01N *33/48;* C09K *3/00*

U.S. Cl. 252—408 6 Claims

1. A standard for determining glycosylated hemoglobin comprising a mixture of hemoglobin and 1% to 25% of the 2,4-dinitrophenyl derivative of hemoglobin wherein a 2,4-dinitrophenyl group blocks the allosteric binding site in hemoglobin.

4,274,979

MANUFACTURE OF ACTIVATED CARBON

Keith Simpson, Llandevaud, Wales, assignor to Clairaire Limited, Berkshire, England

Continuation of Ser. No. 925,925, Jul. 19, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,227

Claims priority, application United Kingdom, Apr. 21, 1978, 15940/78

Int. Cl.[3] C01B *31/10, 31/12;* B01J *20/20;* D01F *9/12*

U.S. Cl. 252—422 34 Claims

1. A batch process for the manufacture of activated carbon, which comprises;

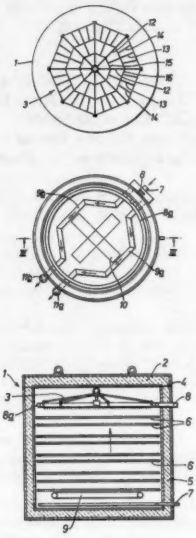
(a) treating a fibrous cellulosic material by contacting it with at least one Lewis acid selected from the group consisting of halides of zinc, aluminum, calcium, magnesium, iron, barium, ammonium and chromium;

(b) drying the treated material;

(c) subjecting the dried material to a mechanical softening treatment;

(d) suspending the softened material from a frame in a tensionless manner, said frame being positioned within a furnace adapted to effect carbonisation of the cellulosic material, the furnace having at least one heating element at its base and at least one heating element arranged on a side wall, each heating element being spaced apart from the suspended material, whereby said suspending places a plurality of the fibers in the fibrous cellulosic material transverse across the furnace;

(e) heating the suspended material in said furnace to effect carbonisation of the cellulosic material; in an environment which is substantially non-reactive towards the material, said heat being directed into the suspended material from a first direction on the side of the suspended material and from a second direction beneath the suspended material;



(f) activating the suspended carbonised material in an activating gas until the desired degree of activation has been produced; and

(g) thereafter cooling the activated material.

4,274,980

CHITIN- AND CHITOSAN-BASED IMMOBILIZED METAL CATALYSTS

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 11, 1979, Ser. No. 83,926

Int. Cl.[3] B01J *31/02*

U.S. Cl. 252—430 2 Claims

1. A catalytic composition of matter comprising a support selected from the group consisting of chitin and chitosan having immobilized thereon in a highly dispersed state at least one metal in a concentration of from about 0.01 to about 10% by weight, wherein at least 51% of said metal is present in its zero-valent state.

4,274,981

CATALYST FOR PURIFYING EXHAUST GAS AND THE PROCESS FOR MANUFACTURING THEREOF

Yoshihiro Suzuki; Hiroo Kinoshita, and Naomi Akasaka, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 2, 1980, Ser. No. 109,148

Claims priority, application Japan, Jul. 6, 1979, 54-85670

Int. Cl.[3] B01J *23/10, 23/58, 23/64, 23/89*

U.S. Cl. 252—438 7 Claims

1. A catalyst for purifying exhaust gas comprising:

a catalyst carrier coated with a metal oxide material containing a spinel metal oxide of the formula: MAl_2O_4 wherein M is Sr, Cu, Mn, Mo, Zn, Fe, Co or Ni, said metal oxide coated carrier further being coated with Rh and Ce and Pt and/or Pd as the catalytically active components.

4,274,982

METHOD FOR MAINTAINING PARA-SELECTIVITY OF MODIFIED ZEOLITE CATALYST

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,331
Int. Cl.[3] B01J *29/28*
U.S. Cl. 252—455 Z 11 Claims

1. A method for prolonging the useful life of para-selective modified zeolite catalysts comprising maintaining said selective zeolite catalyst at temperatures of at least 50° C., said zeolite being characterized by a silica to alumina mole ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, and which zeolite has been modified by the addition thereto of at least 0.25 percent by weight of one or more difficulty reducible oxides.

3. A method as described in claim 1 wherein said zeolite is modified by the addition thereto of magnesium oxide in an amount of at least 0.25 percent by weight.

4,274,983

POLYMERIC CASTS

Eric G. Kent, Sarnia, Canada, assignor to Polysar Limited, Sarnia, Canada

Filed Feb. 5, 1979, Ser. No. 9,287
Claims priority, application Canada, Feb. 17, 1978, 297189
Int. Cl.[3] C08L *7/00*
U.S. Cl. 260—4 R 2 Claims

1. A composition of matter having thermoplastic properties comprising 70 to 80 parts by weight of poly(epsilon caprolactone), 15 to 20 parts by weight of natural rubber or cis-1,4-polybutadiene having at least 80% cis-1,4 content, from 5 to 10 parts by weight of ionomer which is a copolymer of ethylene and acrylic or methacrylic acid neutralized by reaction with mono- or di-valent metal ions (the total of these materials being 100 parts by weight), and 15 to 25 parts by weight of silica having an average particle size of from about 0.01 to 0.1 microns.

4,274,984

CHEMICALLY REDUCING RESIDUAL STYRENE MONOMER IN STYRENE POLYMERS AND SHAPED PRODUCTS FORMED THEREFROM

Edward F. Tokas, West Hatfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 951,503, Oct. 16, 1978, Pat. No. 4,221,905.
This application Sep. 14, 1979, Ser. No. 75,466
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.
Int. Cl.[3] C08K *5/01*
U.S. Cl. 260—4 AR 5 Claims

1. A shaped product formed of a thermoplastic polymer comprising at least about 10 weight percent of polymerized styrene monomer wherein walls thereof contain the reaction product of myrcene and styrene monomer.

4,274,985

CYCLODEXTRIN-POLYVINYL ALCOHOL POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF IN A PEARL, FOIL, FIBER OR BLOCK FORM

Jozsef Szejtli; Eva Fenyvesi; Sandor Zoltan; Bela Zsadon, and Ferenc Tudos, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jul. 9, 1979, Ser. No. 55,536
Claims priority, application Hungary, Jul. 13, 1978, CI 1845
Int. Cl.[3] C08L *5/16*
U.S. Cl. 260—17.4 ST 14 Claims

1. A cyclodextrin-polyvinyl alcohol polymer capable of forming an inclusion complex, and readily sweliable in aqueous solution wherein the cyclodextrin and the polyvinyl alcohol are cross-linked with a polyfunctional coupling reactant capable of reacting with the cylcodextrin and the polyvinyl alcohol.

4,274,986

POLYACETAL MOLDING COMPOSITION

Yukio Ikenaga, and Osamu Matsuno, both of Shizuokaken, Japan, assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 66,252, Aug. 13, 1979, abandoned. This application May 5, 1980, Ser. No. 146,967
Claims priority, application Japan, Jun. 26, 1978, 53-77810
Int. Cl.[3] C08L *91/00*
U.S. Cl. 260—22 CQ 2 Claims

1. A polyacetal composition comprising a polyacetal and, incorporated therein, a polyhydric alcohol fatty acid ester including a hydroxy group and a polyethylene glycol.

4,274,987

COUPLING AGENTS FOR THERMOPLASTIC COMPOSITES

Edward J. Augustyn, Yardville, N.J., assignor to NL Industries, Inc., New York, N.Y.

Continuation of Ser. No. 941,080, Sep. 11, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,578
Int. Cl.[3] C08J *3/10, 3/20, 3/22;* C08K *9/04*
U.S. Cl. 260—23 H 16 Claims

1. A composition comprising a thermoplastic resin containing a particulate inorganic mineral filler and a coupling agent, said coupling agent selected from the group consisting of mono-, di- and tri-long chain fatty acid esters of C_1 to C_{36} mono and polyhydric alcohols, wherein said long chain fatty acid comprises hydroxy fatty acids or acetyl derivatives thereof, and wherein said coupling agent comprises from about 0.5 to 7.5% by weight of said filler.

4,274,988

METHOD OF PREPARING DRY MIXTURES IN POWDER FORM FROM POLYVINYLCHLORIDE, LUBRICATING AGENTS AND STABILIZERS, AND THE MANUFACTURE OF OBJECTS THEREFROM

Martinus A. Snel, Haarlem, Netherlands, assignor to Nautamix B. V., Overveen, Netherlands

Continuation of Ser. No. 969,231, Dec. 13, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,481
Claims priority, application Netherlands, Dec. 18, 1977, 7714021
Int. Cl.[3] C08K *5/09, 5/10;* C08L *27/06*
U.S. Cl. 260—23 XA 3 Claims

1. A process for preparing a dry powdered polyvinylchloride mixture which comprises, blending powdered polyvinylchloride with at least one lubricant and at least one stabilizer, said lubricant being liquid at room temperature and selected from the group consisting of isostearic acid, liquid esters and metal salts thereof, said blending being effected in the absence of added heat other than the normal heat physically inherent in the mechanical act of blending to promote and obtain penetration of the stabilizer, and lubricants in the polyvinylchloride, said blending being effected at ambient temperature to obtain said dry blend.

4,274,989

CATIONIC ELECTRODEPOSITABLE RESIN COMPOSITION

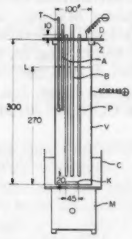
Akira Tominaga, and Reijiro Nishida, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed Sep. 25, 1979, Ser. No. 78,909
Claims priority, application Japan, Dec. 29, 1978, 53-162280
Int. Cl.[3] C08L *75/12;* C08G *59/14*
U.S. Cl. 260—29.2 TN 19 Claims

14. An aqueous bath for cationic electrodeposition, said bath consisting essentially of

(i) as a film-forming ingredient, the reaction product of (A)

an epoxy resin, or an adduct of an epoxy resin with a primary amine and/or a secondary amine, (B) an amino-terminated condensation product obtained by reacting a maleinized fatty acid and a polyamine until the acid value



of the reaction product becomes not more than 5, and (C) a partially blocked polyisocyanate,

(ii) a water-soluble aqueous inorganic or organic acid as a neutralization agent for said reaction product (i), and

(iii) an aqueous medium.

4,274,990

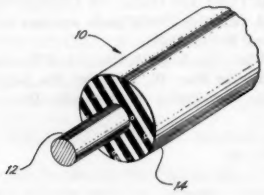
DIELECTRIC INSULATING POLYOLEFIN COMPOSITIONS CONTAINING NITRILE POLYSILOXANE FLUID, AND CONDUCTOR PRODUCTS INSULATED THEREWITH

Burton T. MacKenzie, Jr., 3144 Campfire Rd., Lawrence, Kans. 66044; Maurice Prober, 116 Deep Wood Rd., Fairfield, Conn. 06430, and Stanley E. Kiersztyn, 797 Riverside Dr., Orange, Conn. 06477

Division of Ser. No. 843,614, Oct. 19, 1977, Pat. No. 4,153,752. This application Feb. 5, 1979, Ser. No. 9,313

Int. Cl.³ C08L *83/08;* **H01B** *11/18*

U.S. Cl. 260—29.15 B **13 Claims**



1. A curable polyolefin compound having an ethylene-containing polymer component for use as a dielectric insulation for direct current, comprising at least one ethylene-containing polymer selected from the group consisting of homopolymers of ethylene and copolymers of ethylene and other polymerizable materials, nitrile polysiloxane fluid, and an organic peroxide curing agent.

4,274,991

ALKYL SULPHONIC ACID PHENYL ESTERS SUBSTITUTED BY CARBOXYLIC ACID ESTERS

Jürgen Hinz, Krefeld, and Karola Brudermanns, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

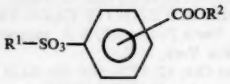
Filed Sep. 29, 1976, Ser. No. 727,644

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1975, 2544552

Int. Cl.³ C08K *5/36;* **C07C** *143/68*

U.S. Cl. 260—30.8 R **6 Claims**

1. A compound of the formula



wherein R^1 is alkyl having 10 to 18 carbon atoms and R^2 is alkyl having 1 to 12 carbon atoms.

4. A composition comprising a polymer plasticized with a compound of claim **1** said polymer being selected from the group consisting of polyvinyl chloride, natural rubber, synthetic rubber and a copolymer of vinyl chloride with a member selected from the group consisting of a vinyl ester, an olefin, α,β-unsaturated monocarboxylic acid ester and α,β-unsaturated dicarboxylic acid ester.

4,274,992

LOW TEMPERATURE CURING POLYESTER RESINS AND COATING COMPOSITIONS

Peter R. Buechler, Wyncote; Earl E. Parker, Allison Park, and Kenneth L. Mollohan, Freeport, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1979, Ser. No. 102,493

Int. Cl.³ C08K *5/07;* **C09L** *67/00*

U.S. Cl. 260—32.8 R **14 Claims**

1. A coating composition capable of forming a film when cured at low temperatures, consisting essentially of:

(a) from about 10 percent to about 75 percent of a polyester resin having an allyloxy content of at least about 5 percent obtained by the reaction of (i) an alcohol having a hydroxyl functionality of at least one and an allyloxy functionality of at least one, provided the total hydroxyl and allyloxy functionalities are at least three, with (ii) a saturated dicarboxylic acid or anhydride; and

(b) from about 25 percent to about 90 percent of a vinyl monomer.

4,274,993

MOLDABLE POLYPHENYLENESULFIDE

Shigeyuki Narisawa; Hiroshi Yanase, and Fukuo Kanno, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,907

Claims priority, application Japan, May 30, 1978, 53-63784; May 30, 1978, 53-63785

Int. Cl.³ C08L *81/02*

U.S. Cl. 260—37 R **11 Claims**

1. A moldable polyphenylenesulfide for injection or extrusion molding obtained by heat-treating a partially cross-linked polyphenylenesulfide at a temperature greater than 290° C. in an atmosphere substantially free of oxygen, said partially cross-linked polyphenylenesulfide being obtained by heating non-crosslinked polyphenylenesulfide at a temperature lower than its melting point in the presence of oxygen.

4,274,994

REACTIVE TERMINALLY UNSATURATED LIQUID POLYMERS IN UNSATURATED POLYESTERS

Changkiu K. Riew, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 73,160, Sep. 6, 1979. This application Jun. 13, 1980, Ser. No. 159,088

Int. Cl.³ C08L *67/06*

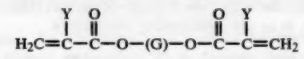
U.S. Cl. 260—40 R **13 Claims**

1. An unsaturated polyester molding composition comprising:

(a) An unsaturated polyester resin,

(b) A polymerizable vinyl monomer, and

(c) From about 2 to about 30 weight parts of a terminally unsaturated liquid epihalohydrin polymer having the formula



wherein Y is hydrogen or methyl, and G is a polymeric backbone comprising polymerized units of at least one epihalohydrin.

4,274,995

FILLED POLYOLEFIN COMPOSITIONS HAVING IMPROVED THERMAL STABILITY

Joseph Silberberg, Brooklyn, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 31, 1979, Ser. No. 109,747
Int. Cl.[3] C08K *3/26, 3/34, 5/52, 9/04*
U.S. Cl. 260—42.14 9 Claims

1. A filled polyolefin composition having improved thermal stability comprising a polyolefin resin, an inorganic filler, and an effective amount for said improved stability of a composition comprising an alkoxylated alkyl acid phosphate.

4,274,996

THERMALLY STABILIZING POLYMERS OF ETHYLENE

Gil R. Hawley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 1, 1979, Ser. No. 90,181
Int. Cl.[3] C08K *5/54*
U.S. Cl. 260—45.9 R 7 Claims

5. A composition of matter comprising a polymer of ethylene and a thermally stabilizing amount of a silane compound represented by the formula R_2SiA_2 or R_3SiA' in which each R is the same or different and is selected from aryl, alkaryl, or aralkyl groups containing from 6 to about 24 carbon atoms, each A is the same or different and is selected from hydrogen, azido, halogen, hydroxy, alkoxy groups in which the alkyl radical contains from 1 to about 10 carbon atoms, and alkenyl of 2 to 6 carbon atoms, and wherein one A being selected from lower alkyl of 1 to 6 carbon atoms the other A is selected from among azido, halogen, hydroxy, and alkoxy, lower alkyl and alkenyl as described above, and A' is selected from among halogen, hydrogen and hydroxy groups.

4,274,997

HALOGENATED POLYMERS STABILIZED WITH TRIAZOLES

Charles A. Schneider, Villa Hills, Ky., and Thomas C. Rees, Park Forest South, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed Nov. 29, 1978, Ser. No. 964,851
Int. Cl.[3] C08K *3/10, 3/22, 5/34*
U.S. Cl. 260—45.75 W 9 Claims

1. A halogenated polymeric composition containing a sufficient amount of an aromatic triazole to prevent degradation at temperatures exceeding 180° C. which comprises at least one polymer selected from the group consisting of polyvinyl chloride, polyvinylidene chloride and combinations thereof and a stabilizing amount of at least one aromatic triazole selected from the group consisting of benzotriazole, tolyltriazole and combinations thereof.

8. The polymer of claim 1 further characterized as containing a zinc compound.

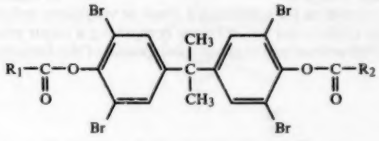
4,274,998

DIESTER OF 3,5,3',5'-TETRABROMO-BISPHENOL A WITH HALOGENATED AROMATIC CARBOXYLIC ACID

Izumi Yamashita, Yokohama; Kunio Fukuda, Chigasaki, and Kichiya Tazaki, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

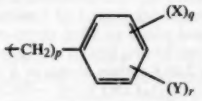
Filed Oct. 11, 1979, Ser. No. 83,956
Claims priority, application Japan, Oct. 20, 1978, 53/129292
Int. Cl.[3] C08K *5/18, 5/17, 5/13, 5/10;* C07C *101/74, 69/78, 69/84, 69/76*
U.S. Cl. 260—45.75 B 25 Claims

1. A compound of the formula (I):



(I)

wherein R_1 and R_2, which may be identical or different, represent the groups of the formula (II):



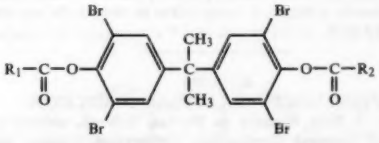
(II)

wherein X is bromine atom; Y at least one group selected from the group consisting of alkoxy groups having 1 to 4 carbon atoms, hydroxyl groups and primary, secondary or tertiary amino groups; p an integer of 0 to 4; q an integer of 1 to 4; r an integer of 1 to 4; and (q+r) is equal to an integer of not more than 5.

10. A polymeric material improved in flame-retardancy, comprising:

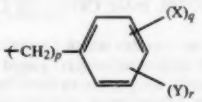
(a) at least one inflammable polymer selected from the group consisting of polystyrene, acrylonitrilestyrene resin, acrylonitrile-butadiene-styrene resin, polyphenylene oxide, polyester, polyamide, polyethylene, polypropylene, polyisoprene, polybutadiene, polyacrylate and polycarbonate; and

(b) at least one compound of the formula (I):



(I)

wherein R_1 and R_2, which may be identical or different, represent the groups of the formula (II):



(II)

wherein X is bromine atom; Y at least one group selected from the group consisting of, alkoxy groups having 1 to 4 carbon atoms, hydroxyl group and primary, secondary or tertiary amino groups; p an integer of 0 to 4; q an integer of 1 to 4; r an integer of 1 to 4; and (q+r) is equal to an integer of not more than 5.

4,274,999

COMPOSITIONS FOR STABILIZING A VINYL OR VINYLIDENE HALIDE POLYMER OR CHLORINATED POLYETHYLENE, POLYMER COMPOSITIONS COMPRISING SUCH A STABILIZER COMPOSITION AND SHAPED ARTICLES PREPARED THEREFROM

Joseph W. Burley, St. Helens; Peter Hope, Liverpool, and Malcolm G. Pritchard, Southport, all of England, assignors to Akzo N.V., Arnhem, Netherlands

Filed Apr. 15, 1980, Ser. No. 140,496

Claims priority, application United Kingdom, Apr. 17, 1979, 13202/79

Int. Cl.[3] C08K *5/58*

U.S. Cl. 260—45.75 S 10 Claims

1. A composition for stabilizing a vinyl or vinylidene halide polymer or chlorinated polyethylene comprising a major proportion of (a) at least one organotin compound of the formula:

$$(R_1OC\,CH_2CH_2)_n\,Sn\,X_{4-n}$$

wherein n=1 or 2, R_1 is an alkyl group having from 1 to 18 carbon atoms and optionally carrying an alkoxy group having from 1 to 18 carbon atoms, a polyoxyalkylene group consisting of oxyalkylene groups having from 1 to 4 carbon atoms and carrying as the terminal group an alkyl group or a hydrogen atom, a cycloalkyl group having from 3 to 6 carbon atoms, and alkenyl group having 2 to 4 carbon atoms, or a phenyl group, X is $\frac{1}{2}$ S, —S R_2, —$S(CH_2)_mCOO\,R_3$ or —$S(CH_2)_2\,OCO\,R_4$ wherein m=1 or 2 and R_2 is an unsubstituted or β-hydroxy substituted alkyl group having from 1 to 18 carbon atoms, a cycloalkyl group having from 3 to 6 carbon atoms or a substituted or unsubstituted alkenyl, aryl, alkaryl or aralkyl group, R_3 is an alkyl group having from 1 to 18 carbon atoms and optionally carrying an alkoxy group having from 1 to 18 carbon atoms, a polyoxyalkylene group consisting of oxyalkylene groups having from 1 to 4 carbon atoms and carrying as the terminal group an alkyl group or a hydrogen atom, a cycloalkyl group having from 3 to 6 carbon atoms, an alkenyl group having from 2 to 4 carbon atoms or an aryl, alkaryl or aralkyl group, and R_4 is a substituted or unsubstituted alkyl group having from 1 to 17 carbon atoms or an unsubstituted or substituted aryl, alkaryl or aralkyl group, with the proviso that n is 2 when X is $\frac{1}{2}$ S; and a minor proportion of (b) at least one unsubstituted or alkyl substituted o-dihydric phenol, the proportions of (a) and (b) being based on their combined weight.

7. A polymer composition which comprises a vinyl or vinylidene halide resin or chlorinated polyethylene and which incorporates therein a stabilizer composition as claimed in any one of claims 1 to 6.

4,275,000

PEPTIDE MACROMOLECULAR COMPLEXES

Walter C. J. Ross, Sunbury on Thames, England, assignor to National Research Development Corporation, London, England

Filed Aug. 21, 1978, Ser. No. 934,710

Claims priority, application United Kingdom, Aug. 22, 1977, 35173/77

Int. Cl.[3] A61K *39/385, 39/44;* C07G *7/00;* C12N *9/96*

U.S. Cl. 260—112 R 22 Claims

1. A macromolecular complex which comprises a first and a second peptide macromolecular moiety, joined by a link derived from a linking agent having two or more reactive groups, one of these reactive groups being selected from the group consisting of activated acyl groups, isocyanates, isothiocyanates, iminoethers, iminothioethers and activated halogen atoms attached to aromatic rings and being capable of reacting with one of the macromolecules from which the macromolecular moieties are derived, under conditions where the remaining reactive group or groups which is or are each selected from the group consisting of aziridine rings, aryl azido groups and halogen atoms in an α-position relative to a carbonyl group or two carbon atoms removed from a hetero-atom carrying a lone pair of electrons, is or are substantially unreactive.

4,275,001

PROCESS FOR THE MANUFACTURE OF LH-RH AND LH-RH ANALOGS USING GLU-HIS(DNP)-OH

Wolfgang König; Volker Teetz, both of Hofheim; Georg Jäger, Bad Soden, and Rolf Geiger, Frankfurt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengeseilschaft, Frankfurt, Fed. Rep. of Germany

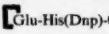
Filed Feb. 12, 1980, Ser. No. 120,924

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1979, 2905502

Int. Cl.[3] C07C *103/52*

U.S. Cl. 260—112.5 LH 4 Claims

1. A method for making LH-RH or an LH-RH analog, which method comprises reacting



in a solvent used in peptide chemistry and in the presence of 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine and a carbodiimide, with a corresponding peptide residue of LH-RH or of an LH-RH analog, said peptide residue having a free amino group and protected carboxy groups, and then splitting off the protective dinitrophenyl group from the resulting product.

4,275,002

PROCESS FOR PREPARING POLYMERIC COLORANTS HAVING A POLY(VINYLAMINE) BACKBONE

Richard D. Gless, Jr., Oakland; Daniel J. Dawson, Mountain View, and Robert E. Wingard, Palo Alto, all of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 520,530, Nov. 4, 1974, Pat. No. 4,018,826. This application Jan. 17, 1977, Ser. No. 760,201

Int. Cl.[3] C07C *107/02, 107/08;* C09B *31/30, 31/64*

U.S. Cl. 260—144 5 Claims

1. The process for preparing a poly(vinylamine)-based polymeric colorant which comprises the steps of (a) reacting at a temperature of from 20° C. to 100° C. acetaldehyde and from two to four stoichiometric equivalents of acetamide in the presence of from 0.001 to 1 mole per mole of acetamide of an aqueous mineral acid catalyst to yield—a vinylacetamide and—ethylidene-bis-acetamide containing reaction product; (b) neutralizing the aqueous mineral acid catalyst and heating the ethylidene-bis-acetamide containing reaction product to 70° C. to 250° C. for from 0.2 to 5 hours in the presence of an inorganic nonacidic silicious oxide surface catalyst having a surface area of at least about 1 m^2/g to yield a decomposition product; (c) separating vinylacetamide from said decomposition product—by vacuum volatilization—; (d) contacting a solution of said vinylacetamide with a catalytically effective amount of free radical initiator polymerization catalyst at a temperature of from 25° C. to 125° C. for from 4 to 8 hours to yield poly(vinylacetamide); (e) hydrolyzing said poly(-vinylacetamide) by contacting it with—from 1.05 to 3—stoichiometric—equivalents—of a mineral acid per equivalent of poly(vinylacetamide)—at a temperature of from 60° C. to 175° C. for from 1 to 36 hours to yield the poly(vinylamine) salt of said mineral acid,—and precipitating and recovering said poly(vinylamine) salt—; (f) contacting said poly(vinylamine) salt with not less than a stoichiometric amount of an aqueous solution of a strong base selected from the alkali and alkaline earth metal hydroxides, thereby forming poly(vinylamine); and (g) coupling, in solution, chromophoric groups to the amine functionalities of said poly(vinylamine).

4,275,003

PREPARATION OF AROMATIC AZOAMINES BY DIAZOTIZATION/COUPLING/REARRANGEMENT OF AROMATIC AMINES

Serge Ratton, La Verpilliere, and Bernard Botannet, Luzinay, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 9, 1978, Ser. No. 876,504
Claims priority, application France, Feb. 11, 1977, 77 04638
Int. Cl.³ C07C *107/06, 107/08;* C09B *29/085, 29/095*
U.S. Cl. 260—205 13 Claims

1. In a process for the preparation of an aromatic azoamine, comprising diazotizing an aromatic amine, coupling the thus prepared diazonium salt with the aromatic amine, and thence rearranging the resulting aromatic diazoamine, the improvement which comprises effecting said diazotization, coupling and rearrangement reactions by introducing vaporous nitrogen oxides comprising an admixture of nitric oxide, NO_1, and nitrogen peroxide, NO_2, or nitrogen trioxide, N_2O_3, wherein the molar ratio of said nitric oxide to said nitrogen peroxide or nitrogen trioxide is between about 2:1 and about 100:1, to a reaction medium including the aromatic amine [α], a salt of the aromatic amine [β], and water [γ], with the percentage weight relationship existing among the components α, β and γ being such that:

$10<\alpha<70$

$13<\beta$

$5<\gamma$

$\alpha+\beta+\gamma=100$.

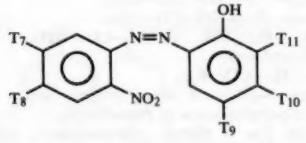
4,275,004

HIGH CAUSTIC COUPLING PROCESS FOR PREPARING SUBSTITUTED 2-NITRO-2'-HYDROXYAZOBENZENES

Roland A. E. Winter, Armonk, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 918,984, Jun. 26, 1978, Pat. No. 4,226,763. This application May 16, 1979, Ser. No. 38,768
Int. Cl.³ C07C *107/06;* C09B *29/12;* C07D *249/20*
U.S. Cl. 260—206 11 Claims

1. A process for the production of a compound of the formula



wherein

T_7 is hydrogen or chlorine,

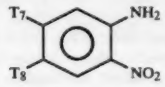
T_8 is hydrogen, chlorine, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, carboxy or $-SO_3H$,

T_9 is alkyl of 1 to 12 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenyl, phenyl substituted with alkyl groups, said alkyl groups having 1 to 8 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, carboalkoxy of 2 to 9 carbon atoms, chlorine, carboxyethyl or arylalkyl of 7 to 9 carbon atoms,

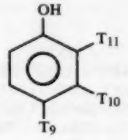
T_{10} is hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, chlorine or hydroxy, and

T_{11} is alkyl of 1 to 12 carbon atoms, chlorine, cycloalkyl of 5 to 6 carbon atoms or arylalkyl of 7 to 9 atoms,

which comprises adding an essentially stoichiometric to a small excess amount, relevant to the phenol to be coupled, of an aqueous mineral acid solution of a diazonium salt of an amine of the formula



where T_7 and T_8 are defined as above, to a strongly alkaline lower alkanol or aqueous lower alkanol solution of a phenol of the formula



where T_9 T_{10} and T_{11} are defined as above, containing alkali metal hydroxide in sufficient amount to neutralize completely the acid diazonium salt solution as added and to still provide an excess of hydroxyl ion concentration and to provide a pH value substantially over 11 throughout the coupling reaction in the reaction mixture, wherein the reaction solvent mixture is at least 50% by weight of lower alkanol, while maintaining the reaction temperature between $-15°$ C. and $+30°$ C., and acidifying the reaction mixture to isolate the product.

4,275,005

CARBAZOLYLMETHANE COMPOUNDS

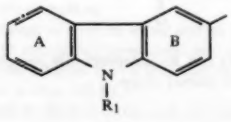
Jean C. Petitpierre, Kaiseraugst, and Peter Burri, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 29,593, Apr. 12, 1979, Pat. No. 4,254,032. This application May 27, 1980, Ser. No. 153,481
Claims priority, application Switzerland, Apr. 24, 1978, 4389/78
Int. Cl.³ C07D *209/86*
U.S. Cl. 260—315 7 Claims

1. A carbazolylmethane compound of the formula

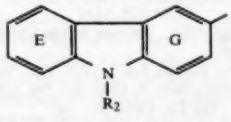
(I)

wherein Q represents a 3-carbazolyl radical of the formula



(Ia)

and each of Y_1 and Y_2 independently, represents a 3-carbazolyl radical of the formula



(Id)

or a 3-carbazolyl radical of the formula (Ia), each of R_1 and R_2

independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents alkenyl containing not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, and the ring A is substituted by phenyl or one or two fused benzene nuclei, and the phenyl radical, the fused benzene nuclei and the rings B, E and G, each independently of the other, are unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

4,275,006

PROCESS OF PREPARING DISPERSANT LUBRICATING OIL ADDITIVES

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 966,179
Int. Cl.[3] C07D *207/12*; C10M *1/38*
U.S. Cl. 260—326.5 SF **2 Claims**

1. A process for preparing a lubricating oil additive which comprises reacting at a temperature of from 20° to 200° C. an oil-soluble hydrocarbyl succinimide dispersant containing at least one primary or secondary amino group, with from 0.2 to 2 mols of SO_2 for every two mols of basic nitrogen present in said dispersant.

2. The process of claim 1 wherein said succinimide is prepared from a polyisobutylene succinic anhydride and triethylene tetraamine or tetraethylene pentamine.

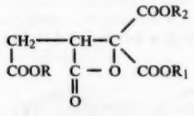
4,275,007

β-LACTONE ESTERS

Eddie N. Gutierrez, Fort Lee, and Vincent Lamberti, Upper Saddle River, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 905,720, May 15, 1978, abandoned, which is a division of Ser. No. 642,850, Dec. 22, 1975, Pat. No. 4,123,458.
This application Sep. 12, 1979, Ser. No. 74,703
Int. Cl.[3] C07D *305/12*
U.S. Cl. 260—343.9 **2 Claims**

1. A beta lactone ester of the formula



wherein said R, R_1 and R_2 independently represent primary alkyl groups of 1–4 carbon atoms.

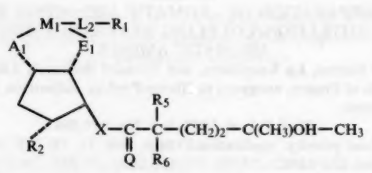
4,275,008

19-HYDROXY-19-METHYL-7A-HOMO-PGI$_2$ COMPOUNDS

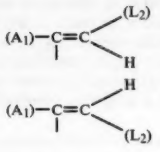
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,720, Jul. 5, 1979, Pat. No. 4,225,507.
This application Mar. 3, 1980, Ser. No. 126,501
Int. Cl.[3] C07D *311/94*
U.S. Cl. 260—345.2 **7 Claims**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_1 is $—CH_2CH_2—$;
wherein L_2 is
(1) $—(CH_2)_j—$, wherein j is one to 4, inclusive,
(2) $—(CH_2)_q—CF_2—$, wherein q is one, 2, or 3, or
(3) —CH=CH—;
wherein M_1 is



wherein Q is oxo, α—H:β—H, α—OH:β—R_4, or α—R_4-:β—OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) $—COOR_3$,
(2) $—CH_2OH$,
(3) $—CH_2N(R_7)(R_8)$,
(4) $—CO—N(R_7)(R_8)$,
(5) $—CO—NH—SO_2—R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{16}$,
wherein —(Ph)— is inter-phenylene and —(p—Ph) is inter-paraphenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of 2 to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—,

(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

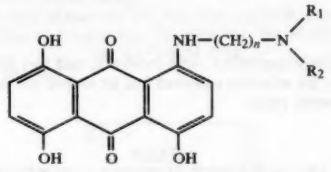
4,275,009

1-(AMINOALKYLAMINO)-5,8-DIHYDROXY-4-SUBSTITUTED-ANTHRAQUINONES

Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 29, 1979, Ser. No. 43,271
Int. Cl.³ C09C 97/26
U.S. Cl. 260—380 8 Claims

1. A compound selected from the group consisting of those of the formula:



wherein n is an integer from 2 to 4, inclusive; R_1 and R_2 are each individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and monohydroxyalkyl having from 2 to 4 carbon atoms and wherein the carbon atom alpha to the nitrogen atom may not bear an hydroxy group; with the proviso that the ratio of the total number of carbon atoms to the sum of the total number of oxygen atoms plus the total number of nitrogen atoms in the side chains at the 1-position may not exceed 4; and the pharmacologically acceptable acid-addition salts thereof.

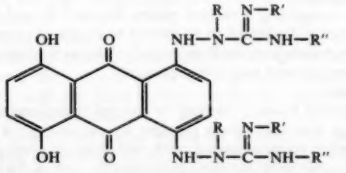
4,275,010

5,8-DIHYDROXY-1,4-BIS(GUANIDINYLAMINO)ANTHRAQUINONES

Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 24, 1979, Ser. No. 87,908
Int. Cl.³ C07C 97/26
U.S. Cl. 260—380 6 Claims

1. A compound selected from the group consisting of those of the formula:



(I)

wherein R, R′ and R″ are selected from the group consisting of hydrogen and straight or branched chain lower alkyl (C_1-C_4) groups.

4,275,011

METHOD OF PRODUCING IMPROVED GLYCERIDE BY LIPASE

Takashi Tanaka; Eiji Ono, both of Kawasaki, and Koichi Takinami, Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Dec. 20, 1979, Ser. No. 105,713
Claims priority, application Japan, Dec. 20, 1978, 53-159517
Int. Cl.³ C11C 3/02; C12P 7/64
U.S. Cl. 260—410.7 9 Claims

1. A method of producing a glyceride, which comprises: interesterifying a glyceride mixture in the presence of a lipase as a catalyst and in the substantial absence of water with a dihydric alcohol, a trihydric alcohol, or a mixture thereof, said glyceride mixture being composed of at least two different glycerides or at least one glyceride and at least one fatty acid.

4,275,012

PROCESS FOR CONTINUOUS REFINING OF OILS AND FATS

Isao Kokubo, Wakayama, and Yoshiharu Kawahara, Osaka, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 140,393
Claims priority, application Japan, May 9, 1979, 54-56561
Int. Cl.³ C11C 3/02
U.S. Cl. 260—421 5 Claims

1. A process for continuous refining of oils and fats characterized in that a starting oil or fat and a lower alcohol containing 0.06–0.15 wt. %, based on the starting oil or fat, of an acid catalyst are continuously fed into a multistage reaction tank provided with a stirring device wherein back mixing hardly occurs to effect the refining treatment of the oil or fat at a reaction temperature of below 67° C., thus refined oil or fat is continuously taken out together with the excessive lower alcohol containing the acid catalyst, they are then divided into a layer of the oil or fat and a layer of the lower alcohol and the major part of the lower alcohol layer is recycled into an inlet of the reaction tank.

4,275,013

NOVEL PROCESS FOR THE PREPARATION OF SALTS OF ALKANESULFONIC ACIDS

Richard Tokosh, Saddle Brook; Joseph Barillo, Glen Rock, and Warren Urban, River Vale, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 535,771, Dec. 23, 1974, abandoned, which is a continuation of Ser. No. 334,514, Feb. 21, 1973, abandoned. This application May 5, 1976, Ser. No. 683,458
Int. Cl.³ C07B 13/00; C07C 143/02
U.S. Cl. 260—504 R 17 Claims

1. A process for the preparation of an alkali or alkaline earth metal or ammonium salt of an alkanesulfonic acid which comprises:

(i) continuously and incrementally adding to a reaction mixture, under reflux, an admixture of a free radical initiator and a acyclic alpha-monoolefinic compound having a terminal double bond and containing from 5–30 carbon atoms or mixtures of said compounds, wherein said reaction mixture comprises:

(1) a cosolvent mixture of water and an aliphatic organic hydroxyl containing compound having from 1–6 carbon atoms wherein the ratio of said organic compound to water is from 4:1 to 1:9,

(2) an alkali or alkaline earth metal or ammonium bisulfite, and

(3) a first portion of a free radical initiator, said first portion of free radical initiator comprising up to about 25% of the total initiator, the remainder of the free radical initiator being admixed with said monoolefin and added simultaneously therewith to said reaction mixture and wherein the ratio of said monoolefin to said bisulfite varies from about 0.1/1.6 to about 1.0/1.6, and

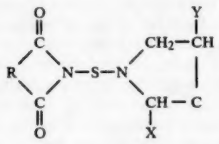
(ii) upon the completion of the addition of initiator and olefin, continuing to reflux the reaction mixture, while maintaining the pH between 4 to 9 by the addition of an acid or acid-forming compound or a base until the reaction is complete.

4,275,014
N-(OXAZOLIDINOTHIO) IMIDES THAT PROVIDE SCORCH RETARDANT NONBLOOMING ELASTOMERIC COMPOSITIONS

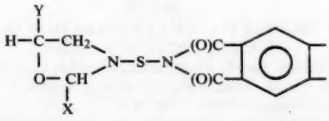
Ivan C. Popoff; Everett A. Mailey, and Paul G. Haines, all of Montgomery, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 902,596, May 23, 1978, Pat. No. 4,220,589. This application Dec. 3, 1979, Ser. No. 99,795
Int. Cl.[3] C08K 5/35, 5/44; C08L 7/00, 11/00
U.S. Cl. 260—780 24 Claims

1. In a sulfur vulcanizable elastomeric polymer composition comprising an admixture of a sulfur vulcanizable elastomeric polymer, sulfur, and other rubber compounding ingredients, the improvement which comprises incorporation within the admixture of a scorch-retardant effective amount of at least one N-(oxazolidinothio) imide compound having the structural formula:



wherein R is an organic divalent radical selected from the group consisting of ortho-phenylene, 1,2-cyclohex-4-enediyl, 1,2-cyclohexanediyl, 4-methyl-1,2-cyclohexanediyl, 1,2-ethanediyl, nd 1,2-ethenediyl; furthermore R can be the divalent radical:



X is a monovalent organic radical selected from the group consisting of phenyl and trichloromethyl radicals; Y is hydrogen with the proviso that Y can be phenyl when X is trichloromethyl; to provide a polymer composition having a high scorch resistance, and final cured vulcanized articles that are bloom resistant.

4,275,015
CARBURETOR WITH MANUAL SELECTABLE FUEL METERING JETS

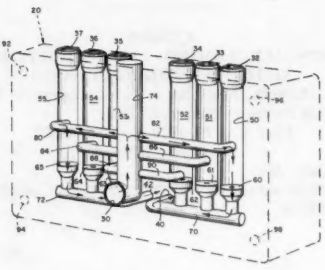
Edmund K. von Delden, 1203 Hickory Ave., Torrance, Calif. 90503

Filed Mar. 25, 1980, Ser. No. 133,817
Int. Cl.[3] F02M 7/14
U.S. Cl. 261—23 A 12 Claims

1. A selectable fuel jet carburetor comprising:

a modular constructed carburetor having a centrally located barrel assembly and a metering plate located adjacent the barrel assembly on one side and a fuel float assembly adapted to be attached to the opposite side of the metering plate,

a fuel jet selector plate containing a plurality of selectable fuel jets interposed between the fuel float assembly and the metering plate, and

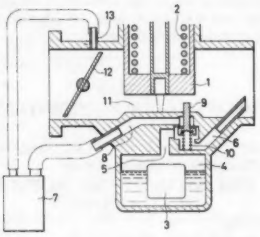


a remotely controlled valve located in said fuel jet selector plate for selecting a desired fuel jet to feed the carburetor metering plate.

4,275,016
VARIABLE VENTURI TYPE CARBURETOR

Toshiharu Morino, Mie, and Masayuki Okamura, Aichi, both of Japan, assignors to Aisan Industry Co., Ltd., Aichi, Japan

Filed Sep. 25, 1979, Ser. No. 78,742
Claims priority, application Japan, Oct. 27, 1978, 53-133070
Int. Cl.[3] F02M 5/08
U.S. Cl. 261—44 C 7 Claims



1. A variable-venturi type carburetor having an intake passage, comprising

means comprising a suction piston disposed in said intake passage and adapted to be moved in a path of movement in dependency on the flow rate of intake air sucked into an engine through said intake passage,

a canister,

a carburetor housing forming an internal passage communicating with said intake passage, a vent passage, a valve chamber communicating with said internal passage and with said vent passage, respectively, and a fuel float chamber communicating with said vent passage and with said valve chamber via said vent passage,

means comprising an external passage for communicating said valve chamber with said canister,

said internal passage communicating between said valve chamber and the intake passage of said carburetor,

means comprising a rod valve disposed in said valve chamber for alternately communicating either said external passage with said vent passage via said valve chamber or said internal passage with said vent passage via said valve chamber depending on predetermined conditions of the engine, and

spring means for biasing said rod valve such that said rod valve in normal condition closes communication between said external passage and said vent passage,

said rod valve having a projecting end portion projecting

into said intake passage spaced from and under said suction piston in the normal condition in the path of movement of said suction piston, said end portion constituting means for being pressed directly by said suction piston only when said suction piston is lowered in a direction opposite to the direction of biasing of said spring means, overcoming the force of said spring means so as to interrupt communication between said internal passage and said vent passage.

4,275,017

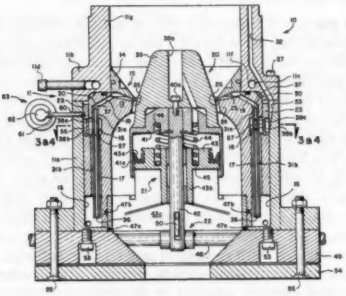
RING CONTROLLED VARIABLE VENTURI DOWNDRAFT CARBURETOR

Ralph T. Rollins, Salt Lake City, Utah, assignor to Clinton Graybill, Superior, Mont.

Continuation of Ser. No. 907,985, May 22, 1978, abandoned. This application Oct. 29, 1979, Ser. No. 88,952

Int. Cl.³ F02M *7/24*

U.S. Cl. 261—53 **5 Claims**



1. A variable venturi carburetor, comprising:

a carburetor housing having a central passage extending therethrough;

a fixed venturi member having an annular surface fixed in the central passage;

a movable venturi member having an annular surface cooperating with the annular surface of the fixed venturi to form a venturi throat therebetween;

means for moving the movable venturi member with respect to the fixed venturi member to vary the size of the venturi throat;

a fuel chamber;

a plurality passage means interconnecting the fuel chamber and the venturi throat at angularly spaced locations through the fixed venturi member for delivering fuel to the venturi throat;

atmospheric air bleed means for bleeding atmospheric air into the passage means to vary the fuel-air mixture passing through the passage means to the venturi throat;

said atmospheric air bleed means including:

bleed ports associated with respective passage means for bleeding atmospheric air through the ports into the passage means;

an annular bleed control ring movably mounted on the fixed venturi member in juxta position to the bleed ports for angular movement with respect to the bleed ports;

said annular bleed control ring having apertures formed therein for registering with respective bleed ports; and

drive means responsive to engine vacuum and operatively connected to the annular control ring for moving the annular bleed control ring angularly to move the ring apertures into and out of registry with the bleed ports to vary the amount of atmospheric air passing into the passage means to vary the fuel air mixture passing through the passage means to the venturi throat.

4,275,018

GRID FOR CARRYING RANDOMLY DUMPED PACKING IN A MASS TRANSFER COLUMN

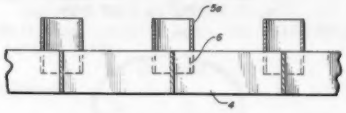
Roland Braun, Ludwigshafen am Rhein, Fed. Rep. of Germany, assignor to Raschig, G.m.b.H., Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 969,001, Dec. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 688,956, May 24, 1976, abandoned. This application Feb. 19, 1980, Ser. No. 122,578

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1975, 2526632

Int. Cl.³ B01D *3/32*

U.S. Cl. 261—94 **4 Claims**



1. In a mass transfer column for carrying randomly dumped packing comprising a grate, which said grate includes a plurality of grid walls defining equally-sized openings, the improvement comprising irregularly poured filler bodies, carried by the grate, having predetermined height and width dimensions equal to each other, the grate having openings smaller in size than the filler bodies received therein, and spacing members disposed at each intersection of the grid walls, for supporting the filler bodies, said spacing members being equally-spaced one from another and at a distance approximately equal to the width of each of said openings, said spacing members having a predetermined height which corresponds to at least one-half the height of a filler body, so as to prevent the filler bodies from covering and closing said openings, and said spacing members comprise cylindrical sleeves having open and closed ends, each of said cylindrical sleeves being provided with elongated vertical slots at the open end thereof for slipping said sleeves on said grid walls at the intersections thereof, said sleeves covering the central areas of the intersections.

4,275,019

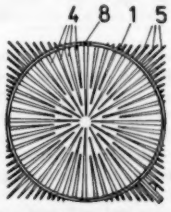
A MODULAR HEAPING-TYPE PACKING ELEMENT

Stanislaw Bednarski, Cracow, Poland, assignor to Przedsiebiorstwo Wdrazania i Upowszechniania Postepu Technicznego i Organizacyjnego "Posteor", Poznan, Poland

Filed Jun. 21, 1979, Ser. No. 50,923

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—98 **5 Claims**



1. A modular packing element for mass and heat exchange, adapted for coupling into an assembly having a vertical axis and a generally prismatic or rectangular shape in cross-section with open bases, comprising a continuous side wall element formed of rolled sheet material having both surfaces formed with an array of elongated, thin protrusions in form of needles, cones, spikes, or the like, of various lengths, extending both inwardly and outwardly of the wall element and located radially uniformly around a central portion of the side wall, and

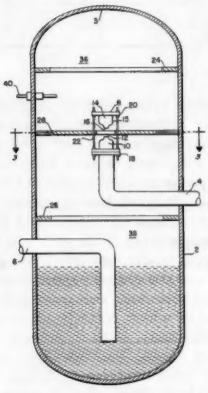
located at generally equal distances from the longer edges of the sheet-like material.

4,275,020

GAS-LIQUID DISSOLVING TANK

David DiGregorio; Daniel McCarthy; Keith J. Mounteer, all of Salt Lake City, and Charles D. Thompson, Hunter, all of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Sep. 20, 1978, Ser. No. 944,116
Int. Cl.³ B01F 3/04; C02F 1/24
U.S. Cl. 261—111 **9 Claims**



1. In an apparatus for continuously dissolving gas in a liquid, which apparatus includes a sealed tank, means for introducing gas under pressure into the tank, means for introducing liquid under pressure into the tank and means for discharging liquid containing dissolved gas from the tank, the improvement comprising:

a. a generally horizontally-disposed tray fixedly mounted within the tank to divide the tank into an upper reaction zone and a lower discharge zone, said tray having communication means formed centrally therethrough for fluid flow communication between said discharge zone and said reaction zone said tray also having formed therein at least one peripheral opening to allow liquid which collects on said tray to flow from said reaction zone to said discharge zone;

b. liquid feed means connected in flow communication with the liquid introduction means and positioned below said tray to discharge liquid upwardly through said communication means into said reaction zone past said tray such that liquid flowing from said reaction zone to said discharge zone through said communication means becomes entrained in said upwardly discharging liquid and is reintroduced to said reaction zone;

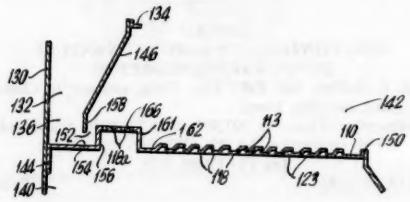
c. liquid distribution means mounted within the tank at a location spaced above said tray, said distribution means having flared sidewalls and a vertically-oriented distribution orifice formed therein, said distribution means being positioned so that a portion of the liquid discharging upwardly from said feed means impacts on said flared sidewalls and is thereby distributed as droplets within said reaction zone and another portion of the liquid discharging from said feed means passes upwardly through said distribution orifice toward the top of the tank.

4,275,021

GAS-LIQUID CONTACTING TRAY WITH IMPROVED INLET BUBBLING MEANS

Robert D. Kirkpatrick, Tonawanda, and David W. Weiler, Burt, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 17, 1977, Ser. No. 778,797
Int. Cl.³ B01F 3/04
U.S. Cl. 261—114 JP **2 Claims**



1. In a gas-liquid contacting tray of the double-pass, side-to-center flow slotted sieve-type for use in a distillation column to effect intimate contact between rising vapor and liquid flowing across a gas-liquid contacting member of the tray having main flat top and bottom surfaces from a liquid inlet adjacent one edge of the contacting member along a liquid flow path on said main top surface including a diverging flow section adjacent said inlet to a liquid discharge adjacent an opposite edge of said contacting member extending transversely from edge to edge of said tray along the tray transverse centerline, said liquid inlet including a substantially horizontally aligned imperforate inlet surface for receiving liquid extending transversely and parallelly oriented with respect to said liquid discharge, and in liquid flow communication with said contacting member, with a downcomer member adapted to be positioned substantially parallel to the distillation column inner wall, spaced above and coextensive with said inlet surface so as to form an exit path beneath the lower end of said downcomer member for introducing liquid to said inlet surface, with a plurality of fixed sized openings distributed across the contacting member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, and a plurality of elevated portions formed from said member across said surfaces each with an upper surface raised from said main flat top surface having a front leading edge separated from said main flat top surface to form an elongated slot opening therewith of greater width than height, the raised upper surface being inclined to said main flat top surface and having a back edge integral with such surface and each elevated portion being spaced from adjacent elevated portions by said main flat top surface entirely surrounding such elevated portion, the improvement comprising:

a first band portion of said contacting member adjacent to said liquid inlet and extending therefrom downstream for distance of from 20% to 50% of the length of the tray diametral streamline from said liquid inlet surface to said liquid discharge and extending transversely outwardly from the tray diametral streamline for distance at least 25% of the transverse length of said liquid inlet surface, with angular orientation of slot openings in said contacting member first band portion with respect to and away from the tray diametral streamline such that the slot angle of individual slots is greater than the angle formed by the diametral streamline and a tangent line at the contacting member outer edge at the point of intersection with said liquid inlet surface, said first band portion being bounded at each of its transverse outer extremities by adjacent second band portions of said contacting member each extending transversely to the contacting member outer edge and downstream to said liquid discharge, said second band portions having angular orientation of slot openings therein with respect to and away from the tray diametral streamline such that the slot angle of individual slots is

between 15° and 45°, and said first band portion being bounded at its downstream extremity by an adjacent third band portion of said tray member extending transversely between said second band portions and downstream from said first band portion to said liquid discharge, said third band portion having lower slot density than said first and second band portions;

a first imperforate wall member contiguously associated and coextensive with an edge of said inlet surface transverse to the liquid flow path and extending substantially vertically upwardly from such edge to a substantially uniform height;

an intermediate wall member with main flat top and bottom surfaces contiguously associated and coextensive with the upper edge of said first wall member extending horizontally therefrom in the direction of said liquid discharge to a substantially uniform extent, with a plurality of fixed size openings uniformly distributed across said intermediate wall member and extending therethrough with walls normal to said main flat top and bottom surfaces for gas flow, to initiate bubbling in liquid flowing across said intermediate wall member from said inlet surface over said first imperforate wall member; and

a second imperforate wall member contiguously associated and coextensive at its upper edge with the downstream edge of said intermediate wall member and extending substantially vertically downwardly therefrom and contiguously associated and coextensive at its lower edge with said one edge of said contacting member, whereby liquid which has been flowed across said intermediate wall member and in which bubbling has been initiated is introduced to said gas-liquid contacting member for flow thereacross to said liquid discharge.

4,275,022

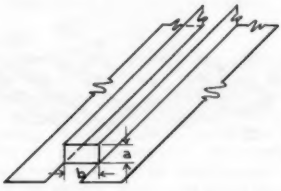
BUBBLE CAP TRAY

Salvatore A. Guerrieri, 503 Beverly Rd., Newark, Del. 19711

Filed Mar. 31, 1980, Ser. No. 136,103

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—114 TC **9 Claims**



1. An improved bubble cap tray for use in vapor-liquid contacting system constructed of channels of two different widths and thicknesses, each channel having a cross section shaped approximately like a block U, the wider channels forming the tray floor and chimneys, being spaced from each other with the sides of channels pointing upward and the space between two adjacent troughs being closed at each end by an end closure whereby the combination of the sides of two adjacent channels and the two end closures form a long, low, narrow chimney; the narrower channels, with sides pointing downward, and with each end closed by end closures, to form caps which are positioned over the chimneys, thereby providing a continuous vapor passage connecting the space below said channels with the space above them, said vapor passages being uniformly spaced across the diameter of the tower, with their long axes parallel to each other, and to the liquid stream as it flows from the inlet side of the tray to the outlet side, the improvement wherein the cap end closures, including centering tabs, are formed integrally with the sides and top of the cap from a single sheet of material, the tabs which center the caps on the chimneys being formed integrally with the cap end closures by bending inwardly the lower corners of the cap end closures for a distance approximately equal to the space between the inside face of the cap and the outside face of the chimney, and the chimney end closures of the tray channels being formed integrally with the tray channels.

4,275,023

EXPANDED PARTICULATE MATERIAL OF POLYOLEFIN RESIN

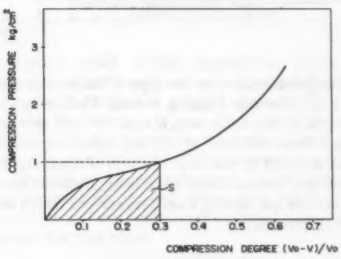
Hiroshi Shimizu; Hiroshi Sato; Nobuo Miura, all of Suzuka, and Shuzo Inada, Yokkaichi, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 127,301, Mar. 5, 1980, which is a continuation-in-part of Ser. No. 931,946, Aug. 8, 1978. This application Aug. 11, 1980, Ser. No. 176,775

Claims priority, application Japan, Aug. 15, 1977, 52/97588; Oct. 3, 1977, 52/117894

Int. Cl.³ C08J *9/22*

U.S. Cl. 264—50 **3 Claims**



1. A process for producing expanded crosslinked polyolefin resin particles, which comprises first allowing particles of a crosslinked polyolefin resin containing a foaming agent to expand to an average expansion ratio of from 3 to 9 and thereafter imparting further expandability to the thus pre-expanded particles by impregnating with a gas under a pressurized atmosphere, further allowing said pre-expanded particles to expand to an average expansion ratio of from 13 to 37, said average expansion ratio being based on the original volume of unexpanded resin particles said expanded particles having an average density of 0.12 to 0.028 g/cm^3 and a compression coefficient ranging from 1.6×10^{-3} to 4.0×10^{-3} as determined from the following formula: $S/(R\times F)$ wherein S represents total energy for compression under pressure of 1 kg/cm^2, R average expansion ratio and F flowability, respectively, of the expanded crosslinked particles, said particles having an average particle size ranging from 1.4 to 5.5 millimeters.

4,275,024

PROCESS AND APPARATUS FOR ELIMINATION OF DENSIFIED AREAS IN BLOCKS OF PLIABLE POLYURETHANE FOAM

Roman Y. Luaces, Pontevedra, Spain, assignor to TEC Foam S.A., Vigo, Spain

Continuation-in-part of Ser. No. 945,893, Sep. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 777,840, Mar. 15, 1977, abandoned. This application Aug. 15, 1979, Ser. No. 66,839

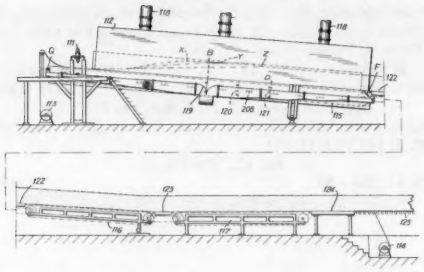
Claims priority, application Spain, May 24, 1976, 448.190; Jan. 18, 1978, 466.102; Feb. 14, 1978, 466.951; Sep. 28, 1978, 473.730; Nov. 29, 1978, 475.522

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—51 **23 Claims**

1. In a method for manufacturing blocks of polyurethane foam by reacting a polyol with a polyisocyanate in the presence of a catalyst and a blowing agent in a foaming tunnel on a web of continuous material supported by a moving endless

belt, the improvement comprising varying the surface temperature of the endless belt so that in a first reaction zone located upstream of said endless belt a constant temperature from 30° to 70° C. is attained, and in a second consolidation zone another constant temperature from 10° to 15° C. higher than in the reaction zone and not higher than 80° C. is attained, said temperature values being constant for each type of foam, the time during which said temperature is maintained for each type



of foam being determined by the type of foam; after the block has emerged from the foaming tunnel, further heating the lower portion of the block which is maintained at a constant temperature from 100° to 250° C.; and removing the web of continuous material to which a thin film of foam remains adhered, a block of polyurethane foam being obtained having no densified bottom and having a uniform surface which does not require final trimming.

4,275,025

REFRACTORY METAL DIBORIDE ARTICLES BY COLD PRESSING AND SINTERING

Russell R. May, Jr., Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 792,640, May 2, 1977, abandoned. This application Apr. 10, 1978, Ser. No. 894,972

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—63 **14 Claims**

1. A method of preparing a substantially flat plate of refractory Group IVb metal diboride powder by cold pressing and sintering, which comprises:

(1) placing refractory Group IVb metal diboride powder in a mold designed to yield the desired shape, said powder having distributed thereon between about 0.5 and 5 weight percent of hydrocarbon binder,

(2) cold pressing said powder in said mold to form a cold pressed flat plate of between about 40 and 65 percent of the theoretical density of the Group IVb metal diboride,

(3) enclosing the cold pressed flat plate in a thermally conductive solid receptacle from which volatile impurities have been removed, said receptacle being chemically inert to the cold pressed flat plate and stable under sintering conditions, said cold pressed flat plate being unconfined by the receptacle,

(4) heating the enclosed cold pressed flat plate substantially uniformly to the sintering temperature of the metal diboride powder without the simultaneous application of pressure to form a sintered metal diboride substantially flat plate having a density of at least about 90 percent of the theoretical density of the metal diboride, and

(5) maintaining the Group IVb metal diboride powder and cold pressed flat plate under an inert atmosphere during steps (1) through (4).

4,275,026

METHOD FOR PREPARING TITANIUM DIBORIDE SHAPES

John G. Hazel, Barberton, and Roger A. Steiger, Canal Fulton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 90,840

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—67 **18 Claims**

1. A method for preparing cold formed and sintered titanium diboride shapes of high density, which comprises the steps of:

a. grinding particulate carbothermic titanium diboride having a surface area of less than about one square meter per gram in the presence of an inert substantially oxygen-free liquid grinding aid in a mill having non-contaminating grinding media for a time sufficient to reduce the particulate titanium diboride to a finely-divided powder having a surface area of at least about three square meters per gram;

b. cold forming the finely-divided titanium diboride powder into a desired shape; and

c. sintering the so-formed shape at temperatures of at least 1800° C. to produce a titanium diboride article having a density of at least about 95 percent of the theoretical density of titanium diboride.

4,275,027

POST-PRESS MOLDING OF MAN-MADE BOARDS TO PRODUCE CONTOURED FURNITURE PARTS

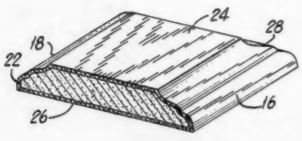
Allan J. Luck, Harvard; John T. Clarke, St. Charles, and Michael R. Hoffman, Elgin, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 819,876, Jul. 28, 1977, Pat. No. 4,145,015, which is a continuation-in-part of Ser. No. 739,184, Nov. 5, 1976, Pat. No. 4,175,150. This application Nov. 19, 1979, Ser. No. 95,629

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—118 **15 Claims**



1. A method of molding a cellulosic fiber board having a skin on at least one surface, comprising:

(a) compressing a cellulosic fibrous mat to form a consolidated blank;

(b) cutting the consolidated blank to a shape slightly larger in at least two dimensions than corresponding interior dimensions of a closed mold cavity;

(c) applying to at least one surface of said blank a solution of urea in an amount of at least 5% by weight urea based on the dry weight of the surface fibers penetrated by said solution;

(d) inserting said cut blank in the open cavity of said mold;

(e) closing said mold;

(f) pressing said blank at a temperature of 525°–650° F. to compress said blank in at least two dimensions to the dimensions of the mold cavity to form a board and form a skin on at least one surface thereof, said skin defined by a thickness of material on said product having a composition different from the composition of the material on which the skin is formed;

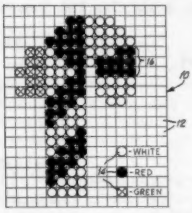
(g) opening said mold; and

(h) removing said board.

4,275,028
PLASTIC ORNAMENT AND METHOD OF MAKING SAME

Melvin Cohen, Roslyn Heights, N.Y., assignor to Holiday Industries, Inc., Bronx, N.Y.

Filed Jan. 24, 1980, Ser. No. 114,892
Int. Cl.[3] B29C 27/00; B29F 5/00
U.S. Cl. 264—126 8 Claims



1. A method of making a self-supporting plastic product, comprising:
(a) placing a layer of plastic pellets onto an underlying mesh according to a predetermined pattern, said mesh made from a material having a higher melting point than said plastic pellets, each hole of said mesh being sized to accommodate a single pellet;
(b) heating the pellets and mesh to cause the pellets to fuse to each other into a self-supporting structure according to the predetermined pattern;
(c) allowing the fused pellets and the mesh to cool; and
(d) separating the mesh from the fused pellets.

4,275,029
METHOD FOR MANUFACTURING CONCRETE BRICK IN BLOCK LIKE ARTICLES AND FORMING SHIPPING PACKS THEREFROM

Don E. Denison, Paris, Tenn., assignor to Lingl Corporation, Paris, Tenn.

Filed Jun. 4, 1979, Ser. No. 44,935
Int. Cl.[3] B29H 7/04
U.S. Cl. 264—152 7 Claims

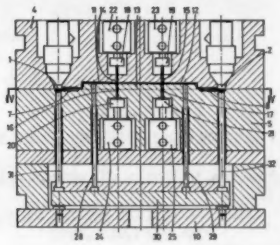
1. In a method of forming shipping packs of brick or block like objects formed from a plurality of vertical slices the improvement comprising forming individual slices, that will form each of the vertical slices, in a horizontal condition prior to curing by molding the brick or block like objects in a spaced apart condition on a curing board in the same configuration as desired for each vertical slice of the shipping pack, curing the brick or block like objects, moving the block like objects on the forming board next to one another into a vertical shipping pack slice, placing the vertical slice in its vertical position and forming a shipping pack from a plurality of such vertical slices.

4,275,030
INJECTION MOLDING ARTICLES OF MORE THAN ONE RESIN COMPONENT

Pedro Mares, Sancho de Avila, 105-111, Barcelona, Spain

Continuation-in-part of Ser. No. 872,645, Jan. 26, 1978, Pat. No. 4,157,883. This application May 8, 1979, Ser. No. 37,213
Claims priority, application Spain, May 10, 1978, 469.965
Int. Cl.[3] B29C 5/00; B29F 1/12
U.S. Cl. 264—250 5 Claims

1. In a process for injection molding a compound structure having at least three serially disposed zones connected to form a single body, the molding being accomplished in a mold having at least three serially disposed adjoining cavities corresponding to said zones and connecting by passageways, the improvement comprising:
(1) filling said passageways between each of the outer end cavities and the respective adjoining cavity with a respective pair of movable abutting plates each having three uniformly spaced adjacent side and end edges for forming a passageway mold cavity,
(2) moving each said plate pair from a non-passageway-blocking position to a position for blocking the respective passageways,
(3) injecting respective thermoplastic materials into both of the outer end and adjoining cavities at different times, and
(4) moving said pairs of abutting plates to position said



passageway mold cavities respectively inbetween said adjoining and end cavities for unblocking the respective passageways blocked in step (2) while the thermoplastic material flat injected in step (3) is weldable to, upon contact with, the thermoplastic material last injected in step (3) to cause contact welding between the thermoplastic materials in the outer end and adjoining cavities and the development in said passageway mold cavities of respective uniform walled connections between said compound structure zones.

4,275,031
AGENT AND PROCESS FOR CARRYING OUT COLORIMETRIC OR PHOTOMETRIC DETERMINATIONS

Wolfgang Fischer, and Brigitte Wissel, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 7, 1979, Ser. No. 36,709
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819645
Int. Cl.[3] G01N 21/03, 31/22
U.S. Cl. 422—57 2 Claims

1. A cuvette for carrying out a colorimetric or photometric determination in aqueous solution consisting essentially of:
a first film-shaped substrate made of non-absorbent, water-insoluble, optically clear material; and
a coating thereon of a solid or waxy organic polymer which dissolves in water to form an optically clear solution, said polymeric coating having a reagent for the determination embedded therein;
wherein the coating on the first substrate is covered by a second film-shaped substrate sealed to the first substrate, said second substrate having a stepped, rectangular cross

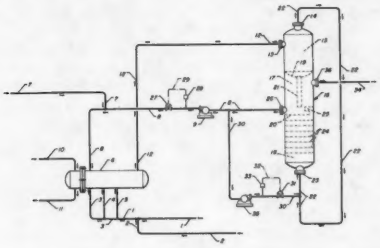
section thereby forming a hollow space of a thickness of 1–3 mm above said coating, said second substrate being made of non-absorbent, water-insoluble, optically clear material; and said hollow space being open on two sides such that a test solution will flow therethrough and fill the hollow space upon submersion of the cuvette in the solution.

4,275,032

ALKYLATION COMBINED SETTLER-SOAKER APPARATUS

Robert F. Anderson, La Grange, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 12, 1979, Ser. No. 56,763
Int. Cl.[2] G01N *29/02*
U.S. Cl. 422—110 **3 Claims**



1. A combination soaking-settling apparatus for treating a reaction mixture from an acid-catalyzed alkylation reaction which comprises an elongated, vertically aligned, cylindrical vessel having an upper settling chamber, a middle settling chamber and a lower soaking chamber, said vessel being separated into said chambers by means of an upper imperforate plate and a lower imperforate plate traversing said vessel in a horizontal plane, and said chambers having outer walls in common with said vessel;

said upper chamber having an acid-hydrocarbon inlet means at a level below a hydrocarbon outlet means, and said chamber being in open communication with said middle chamber through a downspout having an acid inlet in a bottom portion of said upper chamber, and extending downwardly through said upper imperforate plate to provide an outlet at a point in the lower portion of said middle chamber;

said middle chamber having an acid outlet means in a lower portion thereof and a hydrocarbon outlet means in the upper portion thereof;

said lower chamber comprising a multitude of spaced, perforate trays traversing said chamber in a horizontal plane, said chamber further comprising an acid-hydrocarbon inlet means in the lower portion thereof, and said chamber being in open communication with said middle chamber through a chimney in said lower imperforate plate extending upwardly into said middle chamber to provide a hydrocarbon outlet at a point above the outlet of said downspout;

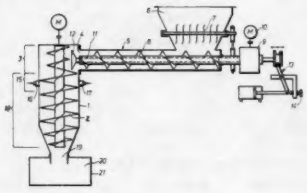
said hydrocarbon outlet means in said upper chamber discharging into an external hydrocarbon transfer conduit which passes downwardly and discharges into said acid-hydrocarbon inlet means in said lower chamber.

4,275,033

APPARATUS FOR PRODUCING A REACTION MIXTURE CONTAINING FILLERS FROM AT LEAST TWO COMPONENTS WHICH ARE CAPABLE OF FLOWING

Klaus Schulte, Leverkusen, and Robert Peters, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 842,427, Oct. 14, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,835
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2649996
Int. Cl.[3] B01F *15/02*
U.S. Cl. 422—133 **3 Claims**



1. An apparatus for producing a polyurethane foam reaction mixture containing filler from at least two components capable of flowing, comprising:

(a) a housing with a channel entering the upper zone, side inlets, and an outlet in the lower zone;

(b) a metering screw for mixing and conveying the filler, within the channel of said housing entering the upper zone;

(c) injection nozzles for feeding the at least two two components into the side inlets of said housing;

(d) an agitator within said housing, which is substantially at a right angle to said metering screw, for mixing the filler and at least two components;

(e) means for rotating said metering screw and said agitator; and

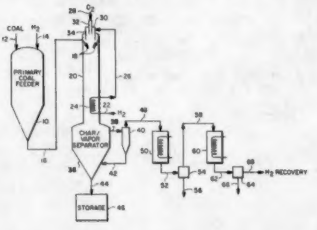
(f) means on said metering screw for closing the channel entering the upper zone of said housing, and thereby regulating the flow of filler.

4,275,034

HYDROGENATION APPARATUS

Joseph Friedman, Encino; Carl L. Oberg, Canoga Park, and Larry H. Russell, Agoura, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 887,566, Mar. 17, 1978, Pat. No. 4,206,032. This application Sep. 4, 1979, Ser. No. 71,897
Int. Cl.[3] B01J *8/12*; C10G *1/06*; F27B *15/08, 15/10*
U.S. Cl. 422—194 **4 Claims**



1. A two-zone apparatus for providing a source of heat and

hydrogen in a first reaction zone for performing a hydrogenation reaction in a second reaction zone comprising:

a housing having walls and opposite ends defining the first reaction zone,

a gas inlet to the housing located in one of said ends and a gas outlet from the housing located in the other of said ends,

a first conduit attached to said gas inlet for introducing a stream of hydrogen into said first reaction zone via said gas inlet,

a second conduit axially disposed within and circumferentially surrounded by said first conduit for introducing a stream of oxygen into a central portion of the hydrogen stream introduced at said gas inlet, said first and second conduits having relative cross-sectional flow areas to provide said oxygen stream in an amount from about 5 to 30 wt. % of said hydrogen stream, said conduits being further disposed relative to each other for maintaining a boundary layer of hydrogen along the walls defining said first reaction zone,

heating means cooperatively associated with said hydrogen stream for heating said hydrogen to a temperature sufficient to initiate an exothermic reaction in said first reaction zone between the central portion of said hydrogen stream and said oxygen stream to produce a heated gas stream comprising a major amount of hydrogen and a minor amount of water vapor and having a temperature within the range of from about 1100° to 1900° C., while a boundary layer of unreacted hydrogen serves to maintain the wall temperature of said reaction zone at a substantially lower temperature than said heated gas stream,

a hydrogenation reaction chamber adjacent to and downstream from said housing, said chamber having inlet and outlet ends and defining a second reaction zone,

injector means located in the inlet end of said chamber for injecting a stream of the material to be hydrogenated into said second reaction zone, said injector means also being connected to and in fluid-flow communication with the gas outlet of said first reaction zone for receiving said heated gas stream from said first reaction zone and for injecting said heated gas stream into said second reaction zone and impinging said streams upon one another, said heated gas stream providing the source of heat and hydrogen for a hydrogenation reaction in said second zone,

discharge means located in the outlet end of said chamber for discharging hydrogenation reaction products from said hydrogenation reaction chamber, and

collection means adjacent to and in flow-communication with the discharge means of said hydrogenation reaction chamber for collecting said hydrogenation reaction products from said chamber.

4,275,035

APPARATUS FOR ELECTRICAL FEED OF A HEATER IN A CRYSTAL-GROWING VESSEL

Maria R. Leonhardt, Mainauweg 9, D-7750 Konstanz 19, Sweden

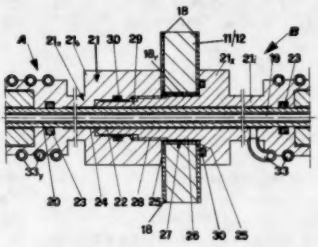
Filed Dec. 30, 1977, Ser. No. 866,044

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2700856

Int. Cl.³ C30B *13/20*

U.S. Cl. 422—250 **28 Claims**

1. Apparatus for growing crystals under vacuum and high pressure between 10^{-6} torr and 300 bars comprising a vessel subjected to high pressure or vacuum in an aggressive medium, a heater in said vessel and a feed line with electrical feed means therein connected to said heater and passing through said vessel for external connection with a high frequency power source for supplying high frequency electrical current to said heater, said electrical feed means comprising first means made of quartz or ceramic providing electrical isolation of said electrical feed means, and second means separate from said first means for sealing the passage of the feed means to said vessel, said electrical feed means further comprising inner and outer coaxial conductors of high-frequency current, said first means comprising a tubular insulating member coaxially interposed between the inner and outer conductors, said outer coaxial conductor including first and second coaxial parts, said second



means comprising radial projecting means on said first and second coaxial parts and seal means interposed between said radial projecting means on said first and second parts and said vessel for sealing the passage of said feed means in said vessel.

4,275,036

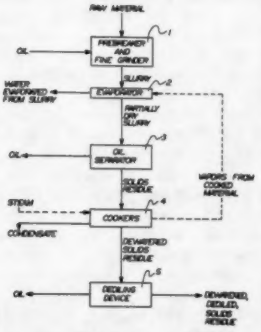
RENDERING SYSTEMS

Richard R. Perry, 1113 Balthis Dr., Gastonia, N.C. 28052; Anthony G. Maran, 25698 Yeoman Dr., Westlake, Ohio 44145, and Anton G. Schols, T. H. Haismastr. 4, 9251 Av Bergum, Netherlands

Division of Ser. No. 82,015, Oct. 5, 1979. This application Jun. 18, 1980, Ser. No. 160,658

Int. Cl.³ B01D *1/22, 17/02*

U.S. Cl. 422—286 **16 Claims**



1. Apparatus for rendering organic raw material comprising oil, water and solids, said apparatus comprising:

means for making a slurry by reducing the particle size of said organic raw material and adding at least enough additional oil to make a pumpable slurry;

means for evaporating a portion of said water by heating said slurry under a partial vacuum to form a partially dewatered slurry;

means for removing a portion of said oil from said partially dewatered slurry to form a hydrous solids residue having a lower water content than said raw material; and

means for cooking said hydrous solids residue to remove substantially all the remaining water to form a dewatered solids residue.

4,275,037

STRIPPING METALS FROM ORGANIC SOLVENT WITH AQUEOUS SOLUTION OF POLYMERIC PHOSPHATES

David J. Friedland, Snyder; Floyd L. Tewksbury, Williamsville, and Martin A. Robinson, East Amherst, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 26, 1978, Ser. No. 973,268
Int. Cl.[3] C01G *43/00*
U.S. Cl. 423—8 6 Claims

1. A process of stripping uranium from an organic solution containing an organic extractant and said uranium which comprises:

(a) contacting said organic solution with an aqueous solution of an inorganic polymeric phosphoric acid or salt thereof under conditions in which the inorganic polymeric phosphoric acid or salt thereof does not rapidly hydrolyze and in which uranium preferentially dissolves in the aqueous solution, and

(b) recovering uranium from said aqueous solution by hydrolyzing said inorganic polymeric phosphoric acid or salt thereof to ortho phosphates.

4,275,038

PROCESS FOR TREATING LOADED EXTRACTANT FROM PURIFICATION OF PHOSPHORIC ACID BY EXTRACTION AND RECOVERING NUTRIENTS

Subhas K. Sikdar, San Juan Capistrano; Donald E. Adam, Santa Ana, and Howard Winterbottom, Pomona, all of Calif., assignors to Occidental Research Corporation, Irvine, Calif.

Filed Mar. 1, 1979, Ser. No. 16,650
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—321 S 11 Claims

1. In a process for purifying an aqueous phosphoric acid containing P_2O_5 values and dissolved ionic impurities comprising magnesium, iron and aluminum ions, wherein (a) said phosphoric acid is contacted with an organic extractant containing a water-immiscible organic sulfonic acid to form: a loaded organic extractant containing the organic sulfonic acid, extracted ionic metallic impurities and extracted P_2O_5 values, and a purified aqueous phosphoric acid; (b) the purified aqueous phosphoric acid is separated from the loaded organic extractant to provide a separated organic extractant; (c) said separated organic extractant is contacted with a solution containing calcium ions, under conditions whereby at least some of said extracted ionic metallic impurities are replaced by calcium and are transferred to said solution, thereby producing the calcium form of the extractant; and (d) said solution is separated from the contacted extractant comprising said calcium form of the extractant; the improvement comprising

(i) contacting said separated extractant, from step (c) comprising said calcium form of the extractant, with sulfuric acid to convert at least some of said calcium form of the extractant to the hydrogen or acid form thereby producing an acidified extractant, used sulfuric acid and solid calcium sulfate;

(ii) separating said solid calcium sulfate, said acidified extractant and the used sulfuric acid;

(iii) recycling said used sulfuric acid to step (i) for further contact with more loaded extractant; and

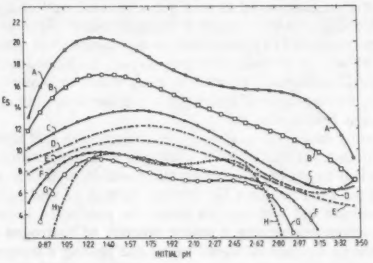
(iv) recycling said acidified extractant to step (a) for further contact with more phosphoric acid.

4,275,039

SEPARATION OF TUNGSTEN AND MOLYBDENUM BY SOLVENT EXTRACTION

Erol Özensoy, London, and Alfred R. Burkin, Brentwood, both of England, assignors to Interox Chemicals Limited, London, England

Filed Feb. 11, 1980, Ser. No. 120,294
Claims priority, application United Kingdom, Jan. 17, 1980, 01663/80
Int. Cl.[3] C01G *39/00, 41/00*
U.S. Cl. 423—54 19 Claims



1. A process for the separation of molybdenum and tungsten comprising the steps of:

(i) contacting an aqueous acidic solution of molybdenum and tungsten with an organic extractant composition, said aqueous solution containing sufficient hydrogen peroxide to prevent a precipitate forming in the aqueous phase and having a pH selected in combination with the amount of hydrogen peroxide in solution, the temperature of the process and the composition of the extractant solution so as to prevent a precipitate forming in the organic extractant phase, and said organic extractant composition comprising;

(a) from 5 to 20% of a substantially water-insoluble organic phosphoric acid,

(b) sufficient trialkyl phosphate in which each alkyl group contains from 4 to 12 carbon atoms, to ensure that component (a) remains in solution,

(c) a tri alkyl phosphine oxide in an amount of at least 1 to 5% by weight based on the organic composition, and

(d) the balance being a hydrocarbon diluent,

(ii) maintaining the aqueous and organic phases in contact until at least some molybdenum has been extracted into the organic phase and thereafter

(iii) separating the organic phase from the barren aqueous phase.

4,275,040

PROCESS FOR EXTRACTING TITANIUM VALUES FROM TITANIFEROUS BEARING MATERIAL

Brian R. Davis, Bricktown, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed May 30, 1980, Ser. No. 154,680
Int. Cl.[3] C01G *23/00*
U.S. Cl. 423—82 9 Claims

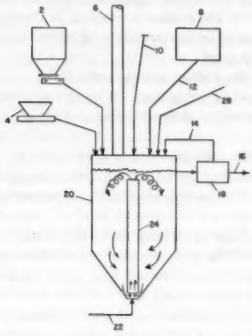
1. A process of extracting titanium values from titaniferous bearing material, which comprises:

(1) preparing a reaction mixture containing a titaniferous bearing material in an amount between about 10% and about 400% above the stoichiometric amount of titaniferous bearing material necessary to react with sulfuric acid to provide titanyl sulfate, and a dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight;

(2) maintaining the temperature of the reaction mixture below about 140° C. in the reaction vessel;

(3) extracting the titanium values by circulating the reaction

mixture in an agitation column located within the reaction vessel in a direction countercurrent to the flow of the reaction mixture in the annular space located between the agitation column and the inner vessel wall, said circulation being done in a manner to maintain the titaniferous bearing material in a continuous turbulent suspension flow in the agitation column;



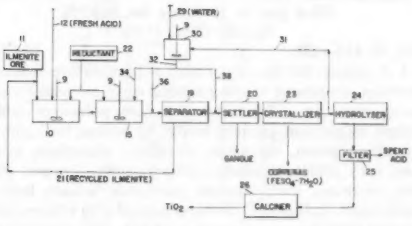
(4) cooling the resulting reaction mixture to a temperature below about 110° C. without precipitating the reaction mixture; and

(5) discharging the reaction mixture from the reaction vessel and recovering the extracted titanium values.

4,275,041
PROCESS FOR MANUFACTURING A STABLE TITANYL SULFATE SOLUTION

Joseph L. Waldman, Elizabeth, N.J.; Edgar Klein, Odenthal-Osenau; Achim Kulling, Leverkusen, both of Fed. Rep. of Germany, and Joseph A. Rahm, Long Branch, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,805
Int. Cl.[3] C01G *23/053, 23/00*
U.S. Cl. 423—82 **8 Claims**



1. A process for preparing a stable titanyl sulfate solution, which comprises:

(1) reacting a titaniferous bearing material in an amount between about 10% and about 400% above the stoichiometric amount of material necessary to react with sulfuric acid to provide titanyl sulfate with a dilute sulfuric acid solution having a concentration between about 25% and about 60% by weight, based upon the total weight of said solution, at a temperature below about 140° C.;

(2) cooling the resulting reaction mixture to a temperature below about 110° C. without precipitating the titanyl sulfate to produce a reaction mixture containing dissolved titanyl sulfate;

(3) diluting the reaction mixture containing titanyl sulfate with a sufficient amount of a diluent material selected from the group consisting of water, titanyl sulfate solution, and mixtures thereof, to produce a reaction mixture having the following properties in the absence of undissolved solids: an iron to titanium dioxide weight ratio of about 0.5–1.2:1.0, a titanium dioxide content of about 120 to about 180 grams per liter, a specific gravity of about 1.4 to about 1.8, and an active sulfuric acid to titanium dioxide mole ratio of about 1.4–1.9:1;

(4) separating undissolved solids and obtaining a stable titanyl sulfate solution.

4,275,042
REMOVAL OF OXALATE FROM BAYER PROCESS LIQUOR

Gordon Lever, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Jan. 22, 1980, Ser. No. 114,281
Int. Cl.[3] C01F *7/06, 7/46*
U.S. Cl. 423—130 **15 Claims**

1. A method for controlling the level of sodium oxalate present in the process liquor in the Bayer process for the production of alumina trihydrate which method comprises the steps of treating spent liquor which contains in excess of 1 gram per liter (as organic carbon) of humic matter and is supersaturated with regard to sodium oxalate, with a cationic sequestrant in an amount to remove sufficient of the said humic matter but not more than 0.5 gram per liter from the said liquor and thereby destabilizing the said liquor with regard to precipitation of sodium oxalate, said sequestrant being an organic cationic sequestrant having a cationic center that interacts with a weakly acidic anionic center in the humic matter to form a product sufficiently insoluble in the Bayer liquor to be physically separable therefrom, holding the said liquor to allow precipitation of sodium oxalate, separating the precipitated sodium oxalate and spent cationic sequestrant and returning the said liquor to the Bayer process.

4,275,043
REMOVAL OF OXALATE FROM BAYER PROCESS LIQUOR

Bohdan Gnyra, Kingston, Canada, assignor to Alcan Research and Development Limited, Montreal, Canada

Filed Jan. 22, 1980, Ser. No. 114,286
Claims priority, application United Kingdom, Jan. 31, 1979, 03410/79
Int. Cl.[3] C01F *7/06, 7/46*
U.S. Cl. 423—130 **15 Claims**

1. A method for controlling the level of sodium oxalate present in the process liquor in the Bayer process for the production of alumina trihydrate which method comprises the steps of treating spent liquor which contains in excess of 1 gram per liter (as organic carbon) of humic matter and is supersaturated with regard to sodium oxalate, with adsorbent material selected from the class consisting of activated carbon, activated alumina and activated clays, in an amount to remove sufficient of the said humic matter but not more than 0.5 gram per liter from the said liquor and thereby destabilizing the said liquor with regard to precipitation of sodium oxalate, holding the said liquor to allow precipitatiion of sodium oxalate, separating the precipitated sodium oxalate and spent adsorbent and returning the said liquor to the Bayer process.

4,275,044
SULFUR DIOXIDE DISPOSAL SYSTEM

John F. Kamody, Irwin, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 806,541, Jun. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 660,058, Feb. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 531,064, Dec. 9, 1974, abandoned. This application Dec. 26, 1978, Ser. No. 973,395

Int. Cl.[3] **C01B** *17/00, 31/00, 17/02, 1/13*

U.S. Cl. 423—242 **16 Claims**

1. An improved process for reducing SO_2 using a carbonaceous fuel gasifier, comprising:

(a) gasifying a carbonaceous fuel in a gasifier in the presence of steam and oxygen to produce a raw gas rich in H_2 and CO;

(b) passing the raw gas from the gasifier at a temperature between 2000° F. and 3500° F. into an organic sulfur reducer along with recycle gas containing SO_2, H_2S, COS, CS_2 and mercaptans and maintaining sufficient residence time within the organic sulfur reducer to react the recycle gas with the raw gas, thereby reducing the COS, CS_2 and mercaptans in the recycle gas to predominantly H_2S and S_2;

(c) passing the raw gas and recycle gas mixture from the organic sulfur reducer into a SO_2 reducer and adding the SO_2 to be reduced to the SO_2 reducer;

(d) maintaining the temperature and residence time within the SO_2 reducer to reduce the SO_2 to predominantly H_2S vapor along with unconverted SO_2 and lesser amounts of COS, CS_2 and mercaptans;

(e) treating the gas from the SO_2 reducer for selective condensation of sulfur vapor to produce a sulfur vapor-free gas at a minimum temperature of 340° F.; and

(f) cooling and condensing water vapor from said sulfur vapor-free gas and then treating the said cooled gas for additional removal of remaining sulfurous gases, with said sulfurous gases recycled to said organic sulfur reduction stage;

(g) and recovering a sulfur free product gas rich in H_2 and CO.

4,275,045
METHOD OF EXTRACTION, TRAPPING AND STORAGE OF RADIOACTIVE IODINE CONTAINED IN IRRADIATED NUCLEAR FUELS

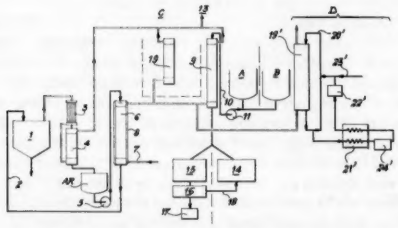
Maurice Anav, Villemoisson-sur-Orge; Jacques Duhayon, Clamart; Jean-Pierre Goumondy, Vitry-sur-Seine; Andre Leseur, Fontenay-aux-Roses, and Edmond Zellner, Gif-sur-Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 589,248, Jun. 23, 1975, abandoned. This application Feb. 27, 1979, Ser. No. 15,778

Claims priority, application France, Jul. 3, 1974, 74 23139

Int. Cl.[3] **G21F** *9/02;* **C01B** *7/14;* **G21F** *9/08, 9/12*

U.S. Cl. 423—249 **10 Claims**



1. A method of extraction, trapping and storage of radioactive iodine contained in irradiated nuclear fuels, comprising the steps of:

dissolving the fuels in a nitric acid medium;

passing the vapors resulting from this dissolution and consisting essentially of water, nitrogen oxides and elemental iodine into a condenser;

passing the vapors coming out of the condenser into a first absorption column for the absorption of the nitrous vapors, in which column is formed recombined nitric acid containing elemental iodine and nitrous ions;

separating out the iodine contained in the recombined acid from the acid in the presence of NO_2^- ions in the recombined acid, and

recovering the iodine in a storable form.

10. A method of extraction, trapping and storage of radioactive iodine contained in the irradiated nuclear fuels, comprising the steps of:

dissolving the fuels in a nitric acid medium;

passing into a condenser the vapors resulting from this dissolution and consisting essentially of water, nitrogen oxides and iodine;

passing the vapors issuing from the condenser into a first column for the absorption of the nitrous vapors, in which column is formed recombined nitric acid containing nitrous ions and iodine;

passing the recombined acid into a desorption column in counterflow to a carrier gas which is thereby loaded with iodine;

circulating said gas in a second absorption column in counterflow to an alkaline solution in which a reducing agent is added in said second absorption column, and

providing to the alkaline solution which leaves the second absorption column an addition of a metal salt, selected from the group consisting of soluble lead salts and soluble copper salts, which precipitates the iodine in the form of the corresponding iodide.

4,275,046
PREPARATION OF HIGH SURFACE AREA METAL FLUORIDES AND METAL OXYFLUORIDES, ESPECIALLY ALUMINUM FLUORIDE EXTRUDATES

Gary B. McVicker, Westfield, and Joseph J. Eggert, Rahway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 16, 1978, Ser. No. 869,776

Int. Cl.[3] **C01G** *43/06*

U.S. Cl. 423—258 **25 Claims**

1. A process for the preparation of high surface area metal fluorides comprising reacting a metal oxide selected from the group consisting of the oxides of sodium, potassium, lithium, cesium, magnesium, calcium, barium, strontium, tin, antimony, bismuth, titanium, zirconium, vanadium, chromium, manganese, iron, cobalt, rhodium, mercury, nickel, copper, silver, zinc, cadmium, lead, uranium, europium, indium, lutetium, neodymium, thallium and mixtures thereof with a fluorocarbon selected from the group consisting of $CH_{4-Q}F_Q$ wherein Q is 1 to 3 and partially and totally fluoridated C_2–C_6 alkanes, alkenes, alkynes and C_5–C_6 cyclic alkanes wherein the metal oxide and the fluorocarbon are contacted at a temperature of from 300° to 800° C. at a fluorocarbon partial pressure of from 0.001 to 100 atmospheres, for a time sufficient to effect the substantially complete conversion of the metal oxide into metal fluoride.

11. A process for the preparation of high surface area aluminum fluoride extrudates comprising reacting a high surface area alumina extrudate with a fluorocarbon selected from the group consisting of $CH_{4-Q}F_Q$ wherein Q is 1–3 and partially and totally fluoridated C_2–C_6 alkanes, alkenes, alkynes and C_5–C_6 cyclic alkane wherein the alumina extrudate and the fluorocarbon are contacted at a temperature of from 300° to 800° C. at a fluorocarbon pressure ranging from 0.001 to 100 atm for a time sufficient to affect the essentially complete conversion of the alumina to an aluminum fluoride extrudate.

4,275,047
ZEOLITE SYNTHESIS

Thomas V. Whittam, Stockton on Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jul. 21, 1977, Ser. No. 817,674

Claims priority, application United Kingdom, Jul. 22, 1976, 30613/76

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **6 Claims**

1. In a method of making a zeolite of the ZSM-5 family consisting of ZSM-5, ZSM-8, ZSM-11, ZSM-12, zeta-1 and zeta-3, said family further characterized as having a SiO_2/Al_2O_3 ratio in the range 5 to 100, a port diameter in the range 6.0 to 6.5 Angstrom units corresponding to rings of $10SiO_4$ and AlO_4 and a characteristic X-ray diffraction pattern, by reacting an alkaline mixture comprising an alumina source, a silica source and alkali metal ions until the required zeolite has been formed, the improvement which comprises reacting said mixture in the presence of a seed quantity of a crystallized zeolite having a port diameter in the range 5.8 to 7.0 Angstrom units wherein the concentration of onium compound be such that the ratio of onium ions to (onium+alkali metal) ions is under 0.05 said crystallized zeolite being nu-1 or FU-1.

4,275,048
PROCESS FOR THE PREPARATION OF FINE DROPLET-REACTED ALUMINOSILICATES OF THE SMALLEST PARTICLE SIZE

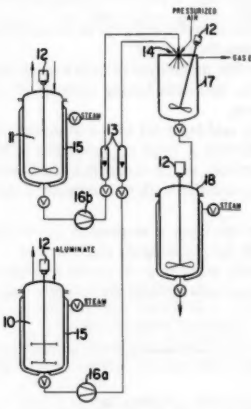
Werner Stein, and Peter Christophliemk, both of Düsseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen and Deutsche Gold- und Silber Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,255

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856278

Int. Cl.³ C01B *33/26, 33/28*

U.S. Cl. 423—329 **19 Claims**



1. A process for the preparation of fine droplet-reacted sodium aluminosilicates with the smallest particle sizes, containing less than 0.1% by weight of granules exceeding 25 μm in size, said aluminosilicates being insoluble in water and containing some bound water, of the general formula

$$x\ Na_2O.Al_2O_3.y\ SiO_2$$

in which x is a number from 0.2 to 1.5 and y is a number from 1.5 to 10, prepared by reacting aqueous sodium aluminate with aqueous sodium silicate in the presence of an excess of aqueous sodium hydroxide and subsequent filtration, comprising the step of separately passing a solution of sodium aluminate with a composition corresponding to the molar ratios:

$$1\ Al_2O_3{:}1\text{ to }10\ Na_2O{:}20\text{ to }200\ H_2O$$

and a solution of sodium silicate with a composition corresponding to the molar ratios:

$$Na_2O{:}SiO_2 \text{ from 0.1 to 10 and}$$

$$H_2O{:}SiO_2 \text{ from 5 to 200}$$

to a spray head, spraying the two solutions into intimate contact, at a ratio by weight corresponding the desired total composition within the molar ratios of:

$$1.5\text{ to }15\ Na_2O{:}1\ Al_2O_3{:}1\text{ to }15\ SiO_2{:}50\text{ to }400\ H_2O$$

at a temperature of between 0° and 103° C., employing a spray system with at least one spray head with at least two liquid channels, each terminating in a jet spray nozzle, one for each solution, in such a manner that the two solutions meet only after leaving the spray head at a velocity sufficient to form a fine mist of droplets, whereby the two reactants undergo reaction while still in the fine mist of droplets stage, with the formation of an X-ray-amorphous sodium aluminosilicate gel, allowing the droplets to settle and recovering an aqueous suspension of said X-ray-amorphous sodium aluminosilicate in a form adapted for crystallization.

4,275,049
CATALYTIC PROCESS FOR CONVERTING HYDROGEN CYANIDE INTO AMMONIA

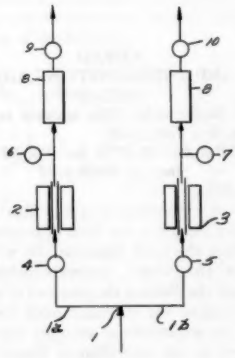
Carl Voigt, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 4, 1980, Ser. No. 174,828

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932322

Int. Cl.³ C01C *1/00*

U.S. Cl. 423—352 **6 Claims**



1. A catalytic process for the production of ammonia from hydrogen cyanide and hydrogen at elevated temperature comprising leading a hydrogen cyanide containing gas and hydrogen at a temperature of 100°–600° C. over an iridium catalyst prepared by reducing hexachloroiridium IV acid on active aluminum oxide, the amount of hydrogen being at least the equivalent amount required to convert all of the hydrogen cyanide to ammonia, and drawing off gas containing ammonia and practically free from hydrogen cyanide from the reaction space.

4,275,050

PRODUCTION OF ULTRA-HARD PARTICLES

Frederic A. French, and Douglas A. French, both of Portola Valley, Calif., assignors to TDC-Technology Development Corporation, Vancouver, Canada

Filed Nov. 8, 1979, Ser. No. 92,485
Int. Cl.[3] C01B *31/00*
U.S. Cl. 423—445 8 Claims

1. Ultra-hard particles having covalently bonded lattice structures composed largely of carbon on an atomic basis and produced by the reaction of Al_4C_3 with a member selected from the group consisting of

$CH_nX_AY_{(4-n)-A}$, $C_2H_{n'}X_{A'}Y_{(6-n')-A'}$, $C_2H_{n''}X_{A''}Y_{(4-n'')-A''}$ and X_2 wherein X and Y are different halogens selected from the group consisting of chlorine, bromine, iodine and fluorine, and wherein A is an integer from 0 to 4, A′ is an integer from 0 to 6 and A″ is an integer from 0 to 4, and wherein n is an integer from 0 to 4, n′ is an integer from 0 to 6 and n″ is an integer from 0 to 4, wherein A, A′, A″, n, n′ or n″ is the same integer in any particular member selected and wherein $n+A=4$, $n'+A'=6$ and $n''+A''=4$, said reaction being carried out at temperatures from about 100° to 700° C. and pressures from about 0.1 to 100 atmospheres or higher in a hot melt system having substantially no solvency capability for carbon while exhibiting substantial solvent and penetrant capability for Al_2O_3 and hydroxy aluminous complexes which naturally form on the surface of aluminum or aluminum carbide in the presence of oxygen or water, said hot melt system comprising a molten solution of more than one metal halide wherein the metals are selected from the group consisting of Group I, Group II and Group III metals of the periodic table and the halides are selected from the group consisting of chlorine, bromine, iodine and fluorine.

4,275,051

SPIN SIZE AND THERMOSETTING AID FOR PITCH FIBERS

John B. Barr, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,321
Int. Cl.[3] D01F *9/12*
U.S. Cl. 423—447.4 12 Claims

1. In a process for producing carbon fibers comprising extruding a molten pitch into the form of continuous pitch filaments, combining the pitch filaments into a single multifilament bundle of pitch fibers, thermally stabilizing the pitch fibers by heating the fibers in the presence of an oxidizing gas and then carbonizing the stabilized pitch fibers at elevated temperatures, the improvement whereby substantially all of the pitch fibers in the multifilament bundle are uniformly coated with a mixture containing graphite or carbon black particles and an oxidizing agent, the graphite or carbon black particles serving to separate the pitch fibers in the bundle and thereby to improve penatration of the oxidizing gas, said improvement comprising applying to the pitch fibers in the multifilament bundle prior to thermal stabilization an aqueous finishing composition comprising a dispersion of finely-divided graphite or carbon black particles in water in which is dissolved a first compound comprising a water-soluble oxidizing agent and a separate second compound comprising a water-soluble surfactant.

4,275,052

PROCESS FOR PREPARING HIGH SURFACE AREA ALUMINAS

Ji-Yong Ryu, Ramsey, N.J., assignor to UOP Inc., Des Plaines, Ill.

Filed May 2, 1980, Ser. No. 146,946
Int. Cl.[3] C01F *7/04*
U.S. Cl. 423—628 11 Claims

1. A method of preparing high surface area alumina comprising the steps of:

(a) preparing a first solution containing from about 5 vol. % to about 50 vol. % of an aluminum alkoxide and an organic solvent selected from the group consistng of ethers, ketones, aldehydes, and mixtures thereof;

(b) admixing with said first solution a second solution comprising from about 1 vol. % to about 50 vol. % water and an organic solvent selected from the group consisting of ethers, ketones, aldehydes and mixtures thereof to form a solid material, said solutions being admixed in amounts to provide a molar ratio of water aluminum alkoxide in the range of from about 1.5:1 to about 4:1; and

(c) drying and calcining said solid material to form alumina having a surface area of from about 300 square meters per gram to about 700 square meters per gram.

4,275,053

BLOOD CELL TYPING AND COMPATIBILITY TEST PROCEDURE

Richard E. Rosenfield, Bronx, and Shaul Kochwa, Queens, both of N.Y., assignors to Mt. Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 856,799, Dec. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 604,808, Aug. 14, 1975, abandoned. This application Jun. 14, 1978, Ser. No. 915,507
Int. Cl.[3] A61K *39/00*; G01N *31/00*
U.S. Cl. 424—12 33 Claims

1. A method for assaying cell type or compatibility on a solid matrix comprising the steps of

(a) forming a first monolayer of cells irreversibly bound to a solid matrix, said cells having intrinsic or acquired antigens thereon;

(b) contacting said layer (a) with a solution containing antibodies, whereby a layer of antibodies is bound by immunoadsorption, to the extent that the antibodies of said solution are reactive with the antigens of the cells of said first layer;

(c) thereafter applying a suspension of second cells, said second cells having antigens thereon; and

(d) subsequently measuring the extent of immunoadherence of said second cells by antibody bound to said first layer of cells.

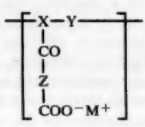
4,275,054

DEODORANTS OR DEODORISERS AND COMPOSITIONS CONTAINING THEM

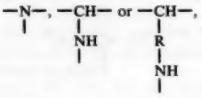
Henri Sebag; Alexandre Zysman, both of Paris, and Guy Vanlerberghe, Claye Souilly, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 841,926, Oct. 13, 1977, abandoned. This application Aug. 27, 1979, Ser. No. 69,859
Claims priority, application Luxembourg, Oct. 20, 1976, 76035
Int. Cl.[3] C08F *8/44, 8/46*; A61K *7/32, 9/14*
U.S. Cl. 424—65 32 Claims

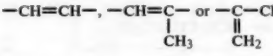
1. A polyanionic polyamide salt which comprises chain units of the formula:



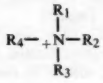
in which X denotes



R being an aliphatic radical containing 1 to 4 carbon atoms, each Y independently denotes a divalent aliphatic or cycloaliphatic radical, Z denotes a divalent radical of the formula:



and M^+ denotes a sodium ion, potassium ion or a quaternary ammonium ion of the formula:



in which each of R_1, R_2, R_3 and R_4 independently denotes a hydrogen methyl, ethyl, hydroxymethyl, hydroxyethyl, hydroxypropyl, methylhydroxypropyl or methyl-dihydroxypropyl radical, the viscosity of a 5% by weight aqueous solution of the salt being from 1 to 500 centipoises at a temperature of 25° C.

4,275,055

HAIR CONDITIONER HAVING A STABILIZED, PEARLESCENT EFFECT

Julius H. Nachtigal, Edison, and David C. Zajac, East Brunswick, both of N.J., assignors to Conair Corporation, Edison, N.J.

Filed Jun. 22, 1979, Ser. No. 51,433
Int. Cl.³ A61K *7/06*
U.S. Cl. 424—70 **10 Claims**

1. In a hair conditioner having a stable pearlescent effect and containing hair conditioning agents, emulsifiers, preservatives, and deionized water, wherein the improvement for providing pearlescence consisting of including therein between about 2.5% and about 7.5% by weight of stearamidopropyl dimethyl benzylammonium chloride, between about 2.0% and about 5.0% by weight of stearyl dimethyl benzylammonium chloride, and sufficient chloride salt to provide a minimum viscosity of 3,000 centipoise, and said hair conditioner having a pH between 3.0 and 4.0.

4,275,056

HGI-GLYCOPROTEIN CAPABLE OF STIMULATING PROLIFERATION AND DIFFERENTIATION OF HUMAN GRANULOCYTE, PROCESS FOR PREPARING SAME AND LEUKOPENIA CURATIVE CONTAINING SAME

Fumimaro Takaku, Utsunomiya; Katsuhiro Ogasa, Yokohama; Morio Kuboyama, Tokyo; Minoru Saito, Komae; Nobuya Yanai, Tokyo, and Masayuki Nishida, Osaka, all of Japan, assignors to Morinaga Milk Industry Co., Ltd., Tokyo and The Green Cross Corporation, Osaka, both of, Japan

Filed Mar. 19, 1979, Ser. No. 22,594
Claims priority, application Japan, Mar. 20, 1978, 53-31999
Int. Cl.³ A61K *35/22;* C07G *7/00*
U.S. Cl. 424—99 **24 Claims**

1. A glycoprotein in pure form from the urine of normal humans, which stimulates human bone marrow cells to form colonies of granulocytes, which has a molecular weight of 75,000 to 90,000 dalton as determined by gel filtration, which has an isoelectric point of pH 4.7±0.2 and which contains 78–85% by weight of protein and 13.0–20.0% by weight of polysaccharide.

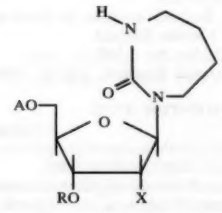
4,275,057

SEVEN-MEMBERED RING COMPOUNDS AS INHIBITORS OF CYTIDINE DEAMINASE

Victor E. Marquez, Gaithersburg; Paul S. Liu, Kensington, and John S. Driscoll, Rockville, all of Md., assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,900
Int. Cl.³ A61K *31/70;* C07H *17/02, 19/04*
U.S. Cl. 424—180 **7 Claims**

1. Nucleoside compounds which are useful in the prevention of deaminating arabinosylcytosine (ara—C) selected from the group consisting of the following:



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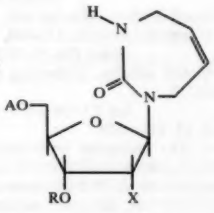

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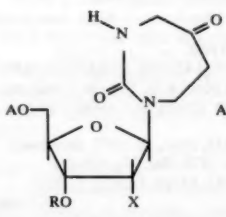

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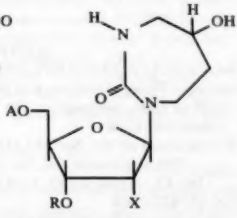

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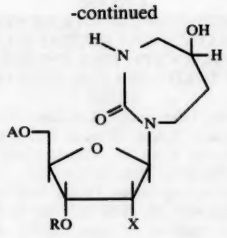
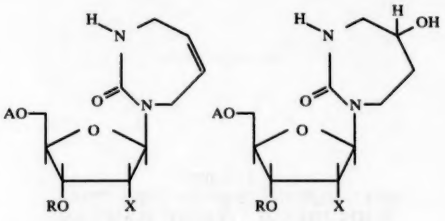


7

wherein R is selected from the group consisting of H, benzoyl, paranitrobenzoyl; X is selected from the group consisting of H, OR; A is selected from the group consisting of R, mono-, di- and tri-phosphates (PO_3E_2, $P_2O_6E_3$, $P_3O_9E_4$); and E is selected from the group consisting of H, Na.

5. A method of inhibiting cytidine deaminase which comprises utilizing an effective amount of a glycoside selected from the following:



4 6

wherein R is selected from the group consisting of H, benzoyl, paranitrobenzoyl; X is selected from the group consisting of H, OR; A is selected from the group consisting of R, mono-, di- and tri-phosphates (PO_3E_2, $P_2O_6E_3$, $P_3O_9E_4$); and E is selected from the group consisting of H, Na.

4,275,058

β-ADRENERGIC BLOCKING ALKANOLAMINE DERIVATIVES

Howard Tucker, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 5, 1979, Ser. No. 9,362

Claims priority, application United Kingdom, Feb. 8, 1978, 5042/78

Int. Cl.³ N61K *31/135;* **C07C** *87/28*

U.S. Cl. 424—199 **6 Claims**

1. The compond erythro-1-(7-methylindan-4-yloxy)-3-isopropylaminobutan-2-ol or an acid-addition salt thereof.

6. A method for the treatment of tremor, migraine, anxiety, schizophrenia, glaucoma or hypertension in man which comprises administering to man an effective amount of the compound of claim 1 or an acid-addition salt thereof.

4,275,059

SALICYLATE ANTI-INFLAMMATORY COMPOSITION

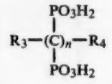
Lawrence Flora, Hamilton, and Marion D. Francis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 782,143, Mar. 28, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,471

Int. Cl.³ A61K *31/60, 31/61, 31/66, 31/615, 31/615*

U.S. Cl. 424—204 **21 Claims**

14. A method for treating or preventing pain and inflammation in animal tissues, comprising administering to an animal in need of such treatment from about 50 milligrams to about 6,000 milligrams per day of a salicylate-based anti-inflammatory compound selected from the group consisting of salicylic acid, acetylsalicylic acid, aloxiprin, calcium, carbaspirin, choline salicylate, methyl salicylate, salicoside, salicylamide, acetylsalicylsalicylic acid, salicylsulfuric acid, and pharmaceutically-acceptable salts and esters thereof, and from about 200 milligrams to about 2,000 milligrams per day of an organophosphonate compound selected from the group consisting of geminal organophosphonates of the formula



or pharmaceutically-acceptable salts thereof, wherein n is an integer from 1 to about 10; R_3 is selected from the group consisting of H, C_1–C_{20} alkyl or cycloalkyl, C_2–C_{20} alkenyl, aryl, phenylethyl, benzyl, halogen, amino, substituted amino, —CH_2COOH, —$CH_2(PO_3H_2)$, —$CH(PO_3H_2)(OH)$, or —$CH_2CH(PO_3H_2)_2$; and R_4 is selected from the group consisting of H, lower alkyl, amino, benzyl, halogen, —OH, —CH_2COOH, —$CH_2PO_3H_2$, or —$CH_2CH_2PO_3H_2$.

4,275,060

METHOD AND COMPOSITION FOR COMBATTING PEST

Quinton A. Geering, Little Eversden, England, assignor to Fisons Limited, London, England

Filed Jul. 17, 1979, Ser. No. 58,811

Claims priority, application United Kingdom, Jul. 19, 1978, 30420/78; Oct. 17, 1978, 40882/78; Nov. 23, 1978, 45861/78

Int. Cl.³ A01N *57/00, 43/16, 37/00, 37/34*

U.S. Cl. 424—218 **7 Claims**

1. A method of combating insects or destroying Insecta eggs comprising applying to the insects, eggs, a locus infested or liable to be infested therewith an insecticidally effective amount of

(A) bendiocarb; and

(B) methyl parathion; the proportions of (A) to (B) being from 1:10 to 1:1 by weight.

4,275,061

STEROIDS AND PROCESS FOR PREPARING THE SAME

Mario Riva, Monza, and Luciano Toscano, Milan, both of Italy, assignors to Pierrel S.p.A., Milan, Italy

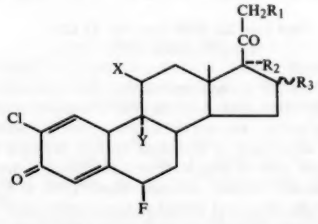
Continuation of Ser. No. 839,881, Oct. 6, 1977, abandoned, which is a continuation of Ser. No. 596,266, Jul. 16, 1975, abandoned. This application Mar. 27, 1979, Ser. No. 24,460

Claims priority, application United Kingdom, Jun. 14, 1975, 25478/75

Int. Cl.³ A61K *31/56*

U.S. Cl. 424—243 **23 Claims**

7. A compound having the formula:



(A)

wherein X is Br, Cl or OQ, Y is Br, Cl, F or H, R_1 is OQ, R_2 is OQ and R_3 is αOQ, and Q in the 16, 17 and 21 positions

represents H and in the 11 position represents H or an acyl radical and pharmaceutically acceptable salts and esters of those compounds wherein Q in the 11 position represents a polycarboxylic or an inorganic acid radical.

14. A method of combatting inflammation in a patient comprising applying a compound according to claim **7** to the patient topically or systemically in a non-toxic pharmaceutically effective amount.

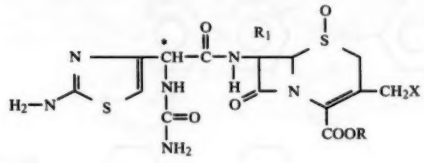
4,275,062

AMINOTHIAZOLYL UREIDO SULFOXIDE CEPHALOSPORINS

Hermann Breuer; Theodore Denzel, and Uwe D. Treuner, all of Regensburg, Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

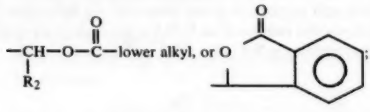
Filed Sep. 19, 1979, Ser. No. 77,056
Int. Cl.[3] **A61K** *31/545;* **C07D** *501/34*
U.S. Cl. 424—122 **20 Claims**

1. A compound of the formula

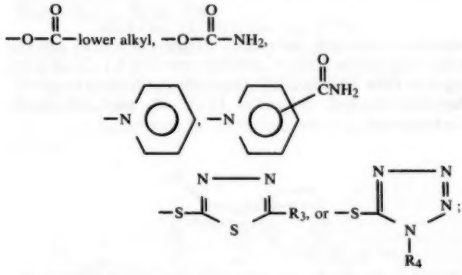


including the imino tautomer form wherein

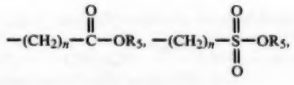
R is hydrogen, sodium, potassium, t-butyl, benzyl, p-methoxybenzyl, p-nitrobenzyl, diphenylmethyl, 2,2,2-trichloroethyl, trimethylsilyl, —CH_2—O-lower alkyl,



R_1 is in the α-configuration and is hydrogen or methoxy;
R_2 is hydrogen or lower alkyl;
X is hydrogen,

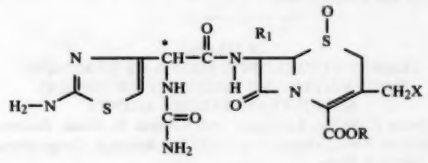


R_3 is hydrogen or lower alkyl;
R_4 is hydrogen, lower alkyl,

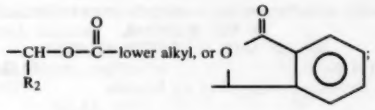


or —$(CH_2)_n$—N—(lower alkyl)$_2$;
R_5 is hydrogen, sodium or potassium; and
n is an integer from 1 to 4.

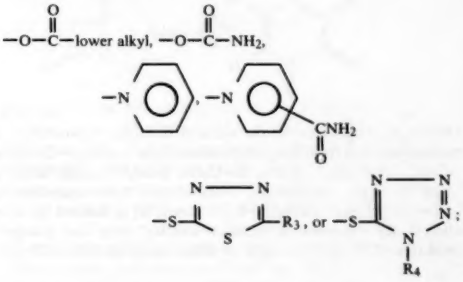
15. An antibacterial pharmaceutical composition comprising a pharmaceutically acceptable carrier and one or more antibacterially active compounds of the formula



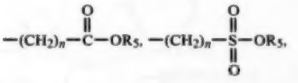
wherein R is hydrogen, sodium, potassium, —CH_2—O—lower alkyl,



R_1 is in the α-configuration and is hydrogen or methoxy; R_2 is hydrogen or lower alkyl; X is hydrogen,



R_3 is hydrogen or lower alkyl; R_4 is hydrogen, lower alkyl,



or —$(CH_2)_n$N(lower alkyl)$_2$; R_5 is hydrogen, sodium or potassium; and n is an integer from 1 to 4.

4,275,063

PHARMACEUTICAL COMPOSITIONS

Andrew M. Creighton, London, England, assignor to National Research Development Corporation, England

Continuation of Ser. No. 631,073, Nov. 12, 1975, abandoned, which is a continuation of Ser. No. 503,763, Sep. 6, 1974, abandoned, which is a continuation of Ser. No. 310,700, Nov. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 126,276, Mar. 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 741,874, Jul. 2, 1968, abandoned. This application Feb. 14, 1977, Ser. No. 768,287
Claims priority, application United Kingdom, Jul. 3, 1967, 30617/67
Int. Cl.[3] **A61K** *31/495*
U.S. Cl. 424—250 **32 Claims**

1. A pharmaceutical composition useful for aiding regression and palliation of sarcoma, lymphosarcoma and leukaemia in humans which comprises an amount therapeutically effective in aiding said regression and pallition of dl, d or l 1,2-bis(3,5-

dioxopiperazin-yl) propane, or an acid addition salt thereof with a physiologically acceptable inorganic or organic acid, in combination with a physiologically acceptable diluent which is sterile and pyrogen-free.

4,275,064

TRANSIENT PRO-DRUG FORMS OF XANTHINE DERIVATIVES AND THEIR USE AS TOPICAL ANTI-INFLAMMATORY AGENTS

Nicholas S. Bodor, Lawrence, and Kenneth B. Sloan, Eudora, both of Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

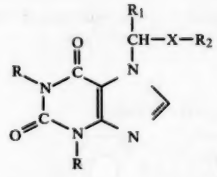
Continuation of Ser. No. 832,448, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 655,786, Feb. 6, 1976, Pat. No. 4,061,753. This application Apr. 30, 1979, Ser. No. 34,630

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.[3] **A61K** *31/52;* **C07D** *473/08*

U.S. Cl. 424—253 **51 Claims**

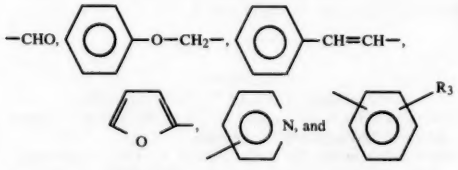
1. A pro-drug compound of the formula:



(I)

wherein R, which may be the same or different, represents a member selected from the group consisting of —CH_3, —C_2H_5, —C_3H_7, iso-C_3H_7, —C_4H_9, iso-C_4H_9, pentyl, benzyl, allyl, 2-hydroxyethyl, cyclohexyl, 2-isobutenyl, hydroxymethyl, 2-phenylethyl and —CH_2O—R_2, wherein R_2 is defined infra; wherein R_1 represents a member selected from the group consisting of H, C_1–C_7 straight or branched alkyl, CCl_3, CBr_3, CI_3,

CH_3O—CH_2—, $(CH_3)_2NCH_2$—,



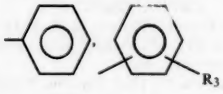
wherein R_3 represents a member selected from the group consisting of —OH, halogen,

—OCH_3,

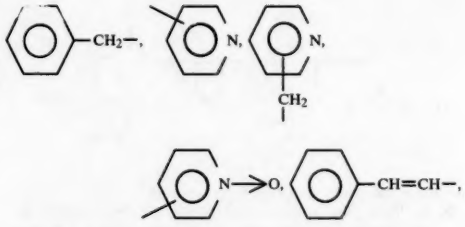
—$COOCH_3$, —NO_2 and —$OCOCH_3$; wherein X is —O—, —S—, or

and wherein R_2 represents a member selected from the group consisting of

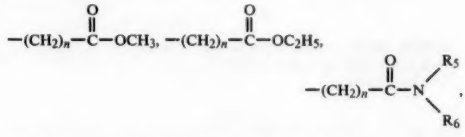
wherein R_4 is a member selected from the group consisting of C_2–C_{20} straight or branched alkyl, cyclo(C_3–C_{10})alkyl,



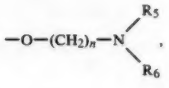
wherein R_3 is defined as above,



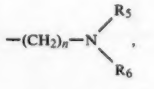
the residue of any naturally occurring amino acid, the residue of any N- substituted amino acid, wherein said substituent is any amino acid protective group cleavable via hydrogenolysis or hydrolysis, the residue of an N,N-C_1–C_5-dialkyl, cycloalkyl, N-heteroaromatic or N-C_1–C_5 alkyl aniline amino acid,



wherein n represents an integer of from 1-5 and R_5 and R_6 which may be the same or different represent C_1–C_5 alkyl or together form a heterocyclic ring with the N atom to which they are attached, imidazolyl, O—C_1–C_8 alkyl, O-benzyl, O-phenyl and



wherein n, R_5 and R_6 are defined as above; and wherein R_2 further represents a member selected from the group consisting of



wherein n, R_5 and R_6 are defined as above, phenyl, tolyl, xylyl, and —SO_2—R_7, wherein R_7 is a straight or branched C_1–C_{20} alkyl.

4,275,065

MODULATING THE IMMUNE RESPONSE WITH 2-SUBSTITUTED-3-HYDROXYTHIAZOLO[2,3-b]BENZO-(AND AZABENZO)THIAZOLIUM SALTS AND MESOIONIC DIDEHYDRO DERIVATIVES THEREOF

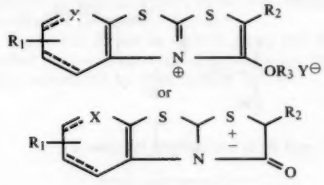
Peter H. L. Wei, Springfield, and Francis J. Gregory, Berwyn, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 50,847, Jun. 21, 1979, abandoned. This application Mar. 31, 1980, Ser. No. 130,483

Int. Cl.[3] **A61K** *31/44, 31/425;* **C07D** *513/04, 513/14*

U.S. Cl. 424—256 **18 Claims**

18. A method of modulating the immune response in warm-blooded animals in need of modulation of the immune response which comprises administering to a warm-blooded animal an amount effective to bring about said modulation of the immune response of a compound having the general formula:



or

wherein

R_1 is hydrogen, halo, amino, lower alkyl, lower alkoxy, trifluoromethyl or hydroxy;

R^2 is lower alkyl, acetyl, trifluoroacetyl, phenyl, or phenyl substituted with fluorine, chlorine, bromine, lower alkyl, lower alkoxy, amino, nitro, and trifluoromethyl;

R_3 is hydrogen or lower alkanoyl;

X is CH or N; and

Y is $CF_3CO_2^{\ominus}$ or a halide and

where the dotted lines represent optional double bonds in the 5,6 and 7,8 positions.

4,275,066

ANTIREPRODUCTIVE TRICYCLIC ORTHO-FUSED NITROGEN CONTAINING COMPOUNDS

Umberto Guzzi, Milan; Amedeo Omodei-Sale', Voghera, and Giulio Galliani, Monza, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

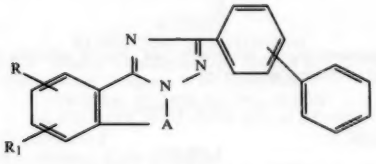
Filed Oct. 23, 1979, Ser. No. 87,371

Claims priority, application United Kingdom, Oct. 30, 1978, 42415/78

Int. Cl.[3] **A61K** *31/47, 31/41;* **C07D** *471/04, 487/04*

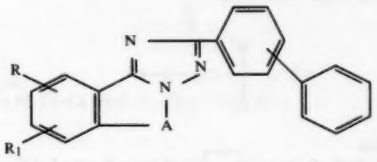
U.S. Cl. 424—258 **8 Claims**

1. A tricyclic ortho-fused nitrogen containing compound of formula



wherein R and R_1 are independently selected from hydrogen, fluoro, chloro, bromo and (C_{1-4}) alkoxy; A may be $—CH_2—$, $—CH_2—CH_2—$, —CH=CH— or $—(CH_2)_3—$; or a salt therewith of a pharmaceutically-acceptable acid.

5. A method for preventing reproduction in warm-blooded animals, which comprises administering to the animal an effective dosage varying from about 0.1 to about 25 mg/kg of body weight of a compound of formula



wherein A, R, and R_1 are defined as in claim **1**.

4,275,067

DECARBOXYCLAVULANIC ACID THIO ETHERS, THEIR PREPARATION AND USE

Eric Hunt, Betchworth, England, assignor to Beecham Group Limited, England

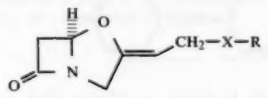
Filed Aug. 10, 1978, Ser. No. 932,489

Claims priority, application United Kingdom, Sep. 14, 1977, 38286/77

Int. Cl.[3] **C07D** *498/04;* **A61K** *31/42*

U.S. Cl. 424—263 **52 Claims**

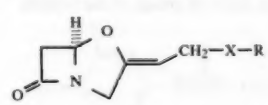
1. A compound of the formula (II):



(II)

wherein X is S, SO or SO_2 and R is $—CH_2CO_2R^2$, $—CH_2—CH_2—R^3$ or R^4 wherein R^2 is a pharmaceutically acceptable salting ion, alkyl of up to 4 carbon atoms or benzyl, R^3 is OR^1, NHR^1, $NH.COR^1$ or CO_2R^2 wherein R^1 is hydrogen, alkyl of up to 4 carbon atoms or benzyl R^2 is as above defined and R^4 is thienyl, furyl, pyridyl, phenyl, or phenyl mono-substituted by fluorine, chlorine, bromine, methyl, OR^1, NHR^1, $NH.COR^1$ or CO_2R^2 wherein R^1 and R^2 are as above defined.

21. A method of treating fungal infections in humans and mammals which comprises administering to a human or mammal in need thereof an anti-fungally effective amount of a compound of the formula (II):



(II)

or a pharmaceutically acceptable salt thereof wherein X is S, SO or SO_2; and R is phenyl unsubstituted or mono-substituted by fluorine, chlorine, bromine, methyl, OR^1, NHR^1, $NH.COR^1$ or CO_2R^2 wherein R^1 is hydrogen alkyl of up to 4 carbon atoms or benzyl and R^2 is a pharmaceutically acceptable salting ion, alkyl of up to 4 carbon atoms or benzyl, in combination with a pharmaceutically acceptable carrier.

4,275,068

LIPID LOWERING ALKYLENE GLYCOLS AND ESTER DERIVATIVES THEREOF

Kurt Thiele; Quazi Ahmed; Ulrich Jahn, all of Zofingen, and Rudolf Adrian, Vordemwald, all of Switzerland, assignors to Siegfried AG, Zofingen, Switzerland

Filed Apr. 23, 1979, Ser. No. 48,536

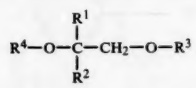
Claims priority, application Switzerland, Aug. 29, 1977, 010498/77; PCT Int'l Appl., Aug. 28, 1978, PCT/CH78/00015

Int. Cl.[3] **C07D** *213/80;* **C07C** *69/90;* **A61K** *31/455, 31/60*

U.S. Cl. 424—266 **19 Claims**

1. A pharmaceutical composition for lowering cholesterol and lipid content of blood in human beings comprising an

effective amount of active lipid lowering alkylene glycol derivatives of the formula (1)



(1)

in which

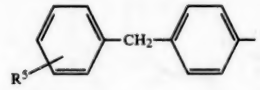
R^1 is the hydrogen atom, an alkyl group having 1–4 C-atoms or benzyl,

R^2 is the hydrogen atom or an alkyl group having 1–4 C-atoms,

R^3 is the hydrogen atom or a group of the formula

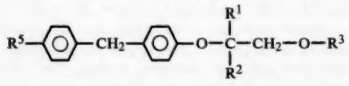
in which Z is an alkyl having 1 to 10 C-atoms, O-acetyloxyphenyl, or 3-pyridinyl and

R^4 is a residue of the formula



in which R^5 is the hydrogen or chlorine atom or the methyl group.

14. A compound of the Formula (1)



(1)

wherein R^1 is selected from the group consisting of hydrogen and alkyl groups having from 1 to 4 carbon atoms; R^2 is selected from the group consisting of hydrogen and alkyl groups having from 1 to 4 carbon atoms; R^3 is selected from the group consisting of hydrogen and acyl groups of the formula

wherein Z is selected from the group consisting of alkyl groups having from 1 to 10 carbon atoms, o-acetyloxy phenyl and pyridinyl; and R^5 is selected from the group consisting of hydrogen and chlorine with the proviso that R^5 is chlorine when R^3 is hydrogen.

4,275,069

ANTI-DIABETIC 1,2-DIHYDRO-2-OXO-6-ALKYL-NICOTINIC ACIDS

Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

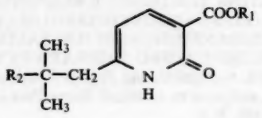
Continuation-in-part of Ser. No. 5,454, Jan. 22, 1979, Pat. No. 4,220,648. This application Nov. 28, 1979, Ser. No. 97,925

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.³ C07D *213/55*; A61K *31/44*

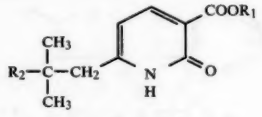
U.S. Cl. 424—266 **6 Claims**

1. A 1,2-dihydro-2-oxo-nicotinic acid derivative of the formula



where R_1 is hydrogen or alkyl of one to four carbon atoms, inclusive, and R_2 is alkyl of two to four carbon atoms, inclusive, or the pharmacologically acceptable salts thereof.

3. A method of treating a human suffering from adult-onset diabetes mellitus which comprises orally administering to said human an amount of exert a predetermined systemic antihyperglycemic effect of a 1,2-dihydro-2-oxo-nicotinic acid of the formula



wherein R_1 and R_2 are as defined in claim **1**.

4,275,070

ANTIPSYCHOTIC PHARMACEUTICAL COMPOSITIONS OF THE LEVOROTATORY ENANTIOMERS OF 3-METHOXYCYPROHEPTADINE AND AN ANALOG THEREOF

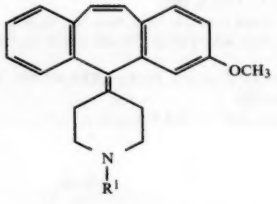
David C. Remy, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 40,820, May 21, 1979, abandoned. This application May 19, 1980, Ser. No. 151,232

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 **4 Claims**

1. A method of treating psychoses which comprises the administration to a patient in need of such treatment an effective antipsychotic amount of a racemic or levorotatory compound of formula:



or pharmaceutically acceptable salt thereof wherein R^1 is methyl or cyclopropylmethyl.

4,275,071

IMIDAZOLE DERIVATIVES

Dante Nardi; Alberto Tajano, and Maria J. Magistretti, all of Milan, Italy, assignors to Recordati S.A., Chiasso, Switzerland

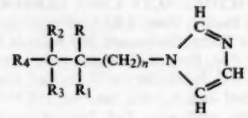
Filed Jul. 10, 1979, Ser. No. 56,290

Claims priority, application Italy, Jul. 26, 1978, 26094 A/78

Int. Cl.³ C07D *233/60, 233/58*

U.S. Cl. 424—273 R **19 Claims**

1. An imidazole derivative of the general formula



wherein R_4 represents a 1,2,3,4-tetrahydro-6-naphthyl group or a phenyl group substituted in the 4-position by a phenyl, cyclohexyl, or phenylthio group, a 4-bibenzyl group or a 3,4-dihydroxy-phenyl group, n is 0, 1 or 2, and

(a) each of R and R_1, which may be the same or different represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms or a phenyl group, R or R_1 being a phenyl group when R_4 is biphenyl, one of R_2 and R_3 represents a hydrogen atom, and the other of R_2 and R_3 represents a hydroxyl group, R_2—C—R_3 being carbonyl when R_4 is 3,4 dihydroxy phenyl,

(b) n, R_4, R and R_1 are as defined in (a) and R_2 and R_3 together represent an oxygen atom, except when R_4 is phenyl substituted by 4-phenylthio, or

(c)

represents a vinylene group and

R_4 and n are the same as above, or

a pharamceutically acceptable acid addition salt thereof.

18. An anticonvulsant composition which comprises a pharmaceutically acceptable diluent or carrier and, as active ingredient, an effective amount of an imidazole derivative as claimed in claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **48–50**, **69**, **71**, **75**, **80**, **98**, or 99.

4,275,072

2,6-DICHLOROPHENYL-SUBSTITUTED AMINO-IMIDAZOLE DERIVATIVES AND USE AS HYPERTENSIVE AGENTS

Arto Karjalainen, and Kauko Kurkela, both of Oulu, Finland, assignors to Farmos Group, Ltd., Turku, Finland

Continuation-in-part of Ser. No. 934,371, Aug. 16, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,247

Int. Cl.[3] **A61K** *31/415*; **C07D** *233/54*

U.S. Cl. 424—273 R **12 Claims**

1. A 2,6-dichlorophenyl-substituted amino-imidazole derivative having anti-hypertensive properties selected from the group consisting of 1-(2',6'-dichlorophenyl)-2-amino-4-methyl-imidazole, its non-toxic, pharmaceutically acceptable acid addition salts and mixtures thereof.

4,275,073

FUNGICIDAL COMPOUNDS

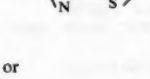
William K. Moberg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 29, 1980, Ser. No. 144,859

Int. Cl.[3] **A01N** *43/56*; **C07D** *495/04, 487/00*

U.S. Cl. 424—273 P **30 Claims**

1. A compound of the formula

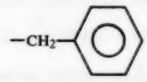


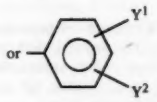
wherein

X is —S—S—S— or

and

R is H, C_1–C_6 alkyl, C_5–C_6 cycloalkyl,





Y^1 and Y^2 independently are H, F, Cl, Br, p-methoxy or p-nitro.

21. A method for control of fungi on plants which comprises applying to a plant to be protected a fungicidally effective amount of a compound of claim **1**.

4,275,074

CATECHOLAMINE TREATMENT OF OCULAR HYPERTENSION

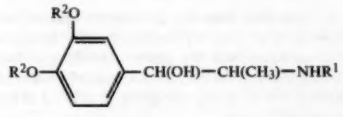
Maurice E. Langham, Lutherville, Md., assignor to Graham J. Dobbie, Chicago, Ill., a part interest

Filed Mar. 9, 1979, Ser. No. 19,037

Int. Cl.[3] **A61K** *31/365, 31/135, 31/22, 31/225*

U.S. Cl. 424—280 **18 Claims**

1. A method of treating ocular hypertension in a mammal which comprises topically applying to the eye of the mammal in need of such treatment an effective intraocular pressure-reducing amount, but less than an amount inducing substantial mydriasis, of a catecholamine of the general formula



wherein R^1 is a member of the group consisting of hydrogen and methyl, and R^2 is a member of the group consisting of hydrogen and acyl containing 1 to 8 carbon atoms, inclusive, or the pharmacologically acceptable acid addition salt thereof, together with an ophthalmic vehicle.

4,275,075

15-CYLOBUTYL-TRANS-Δ^2-PROSTAGLANDIN ANALOGUES

Masayasu Kurono, Osaka; Hisao Nakai, Takatsu-ku, and Shigeru Sakuyama, Nagaokakyo, all of Japan, assignors to ONO Pharmaceutical Co. Ltd., Osaka, Japan

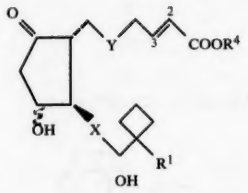
Filed Jun. 14, 1978, Ser. No. 915,493

Claims priority, application United Kingdom, Jun. 14, 1977, 24867/77

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 424—305 **9 Claims**

1. Prostaglandin analogues of the general formula:



wherein X represents trans-vinylene or ethylene, Y represents cis-vinylene or ethylene, R^1 represents a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms and R^4 represents
a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 12 carbon atoms and the double bond between C_2–C_3 is trans; and cyclodextrin clathrates of such prostaglandin analogues and, when R^4 represents a hydrogen atom, the non-toxic salts thereof.

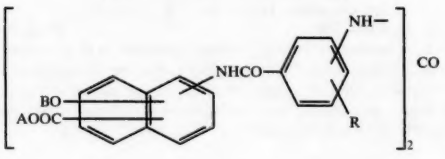
4,275,076

SUBSTITUTED NAPHTHOIC ACIDS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

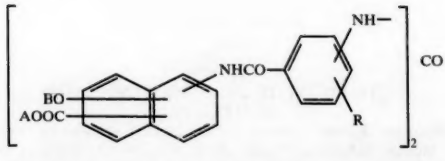
Filed Feb. 4, 1980, Ser. No. 118,006
Int. Cl.³ A61K *31/24;* **C07C** *101/52*
U.S. Cl. 424—309 **14 Claims**

1. A compound of the formula:



wherein A is selected from the group consisting of hydrogen, lower (C_1–C_6) alkyl and a pharmaceutically acceptable salt cation; B is selected from the group consisting of hydrogen, lower (C_1–C_6) alkanoyl and a pharmaceutically acceptable salt cation; and R is selected from the group consisting of hydrogen and lower (C_1–C_3)alkyl.

7. A method of inhibiting connective tissue destion in a warm-blooded animal which comprises administering to said animal an effective inhibiting amount of a compound of the formula:



wherein A is selected from the group consisting of hydrogen, lower (C_1–C_6)alkyl and a pharmaceutically acceptable salt cation; B is selected from the group consisting of hydrogen, lower (C_1–C_6)alkanoyl and a pharmaceutically acceptable salt cation; and R is selected from the group consisting of hydrogen and lower (C_1–C_3) alkyl.

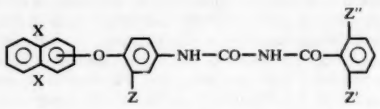
4,275,077

INSECTICIDAL ACYL UREA DERIVATIVES

Heinz-Manfred Becher, Bingen; Richard Sehring, Ingelheim am Rhein; Walter Wirtz, Darmstadt, and Ricarda Prokic-Immel, Mainz, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jan. 8, 1980, Ser. No. 110,375
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1979, 2901334; Jul. 5, 1979, 2927123
Int. Cl.³ A01N *9/20;* **C07C** *127/22*
U.S. Cl. 424—322 **8 Claims**

1. A compound of the formula



wherein
X and Y are each independently hydrogen, chlorine or bromine;
Z is hydrogen or chlorine;
Z′ is chlorine or fluorine; and
Z″ is hydrogen, chlorine or fluorine.

8. The method of killing insects or acarids, which comprises contacting the same with an effective insecticidal or acaricidal amount of a compound of claim **1**.

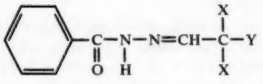
4,275,078

N-BENZOYL-N′-HALOGENOALKYLIDENEHYDRAZINE DERIVATIVES, PROCESS FOR PREPARING SAME, AND AGRICULTURAL AND HORTICULTURAL FUNGICIDE COMPRISING SUCH DERIVATIVES

Katsumichi Aoki; Takafumi Shida; Satoru Kumazawa; Masashi Ohtsuru, and Shiro Yamazaki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,010
Claims priority, application Japan, Apr. 24, 1978, 53-48493
Int. Cl.³ C07C *109/18;* **A01N** *9/20*
U.S. Cl. 424—324 **2 Claims**

1. An agricultural and horticultural fungicide composition comprising an effective amount of at least one of N-benzoyl-N′-halogenoalkylidenehydrazine derivatives of the formula:



wherein
X represents an atom of chloride or bromine, and
Y is a member selected from the group consisting of hydrogen, fluorine, chlorine, bromine, methyl and 1-chloroethyl, provided that when X is chlorine, Y is one of the above-defined members other than chlorine, and an agriculturally and horticulturally acceptable carrier.

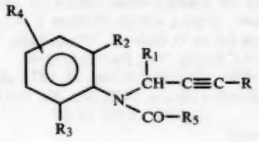
4,275,079

FUNGICIDAL N-ALKYNYLANILIDES

Franz Dorn, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

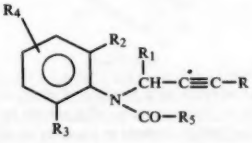
Filed May 7, 1980, Ser. No. 147,676
Claims priority, application Switzerland, May 18, 1979, 4675/79; Mar. 14, 1980, 2015/80
Int. Cl.³ C07C *103/58;* **A01N** *9/12, 9/20*
U.S. Cl. 424—324 **22 Claims**

1. A compound of the formula



wherein R is hydrogen, methyl or ethyl, R_1 is hydrogen or methyl, R_2 and R_3 each are alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 3 carbon atoms or halogen, R_4 is hydrogen, alkyl of from 1 to 3 carbon atoms or halogen and R_5 is the group $—CH_2—O—R_6$ or $—CH_2—S—R_6$ in which R_6 is alkenyl of 3 or 4 carbon atoms or alkynyl of 3 or 4 carbon atoms, with the proviso that the total number of carbon atoms in substituents R_2, R_3 and R_4 does not exceed 6.

17. A fungicidal composition which comprises compatible carrier material and, as the active ingredient, an amount which is effective as a fungicide of a compound of the formula



wherein R is hydrogen, methyl or ethyl, R_1 is hydrogen or methyl, R_2 and R_3 each are alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 3 carbon atoms or halogen, R_4 is hydrogen, alkyl of from 1 to 3 carbon atoms or halogen and R_5 is the group $—CH_2—O—R_6$ or $—CH_2—S—R_6$ in which R_6 is alkenyl of 3 or 4 carbon atoms or alkynyl of 3 or 4 carbon atoms, with the proviso that the total number of carbon atoms in substituents R_2,R_3 and R_4 does not exceed 6.

4,275,080

FLAVORING WITH 8-P-CYMENYL-ETHYL ETHER

Cynthia J. Mussinan, Bricktown; Braja D. Mookherjee, Holmdel; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; James M. Sanders, Eatontown, N.J.; Bette M. Light, Highlands, N.J., and Edward J. Granda, Englishtown, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 12,798, Feb. 16, 1979, which is a division of Ser. No. 939,897, Sep. 5, 1978, Pat. No. 4,163,068, which is a division of Ser. No. 872,937, Jan. 27, 1978, Pat. No. 4,131,687. This application Oct. 26, 1979, Ser. No. 88,571

Int. Cl.[3] **A23L** *1/226*

U.S. Cl. 426—3 **1 Claim**

1. A process for flavoring a foodstuff or chewing gum to impart a herbal, coumarin-like and green aroma characteristic with herbal, cumin-like, lemon juice-like, green, and oily flavor characteristics comprising the step of adding to a foodstuff or chewing gum from 0.5 ppm up to about 100 ppm of synthetically produced substantially pure 8-p-cymenyl ethyl ether having the structure:

4,275,081

FAT PROCESS AND COMPOSITION

Michael H. Coleman, Bedford, and Alasdair R. Macrae, Oakley, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 846,303, Oct. 28, 1977, abandoned, which is a continuation of Ser. No. 766,117, Feb. 7, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,523

Claims priority, application United Kingdom, Feb. 11, 1976, 5376/76

Int. Cl.[3] **A23D** *5/00;* **C12P** *7/64*

U.S. Cl. 426—33 **21 Claims**

1. A process for the interesterification of glyceride oil or fat, comprising:

treating said oil or fat with a water-soluble microbial lipase enzyme under conditions to effect an interesterfication reaction, in the presence of up to 10% water wherein said water-soluble microbial lipase enzyme is adsorbed on an inert, powdered, water-insoluble dispersing agent and recovering from the reaction a glyceride product free from fatty acid and partial glycerides.

4,275,082

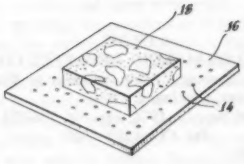
FROZEN PUFF PASTRY AND EDIBLE INSERT COMBINATION AND PROCESS

Ernest V. Dougan, Southport, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,497

Int. Cl.[3] **A21D** *6/00, 13/08;* **A23G** *3/00;* **A23L** *1/31*

U.S. Cl. 426—92 **16 Claims**



1. A frozen food product which is adapted for the preparation of a filled pastry shell and comprises: an unbaked sheet of puff pastry dough comprising a central portion which is sufficiently disrupted to reduce normal rising, and a substantially-continuous peripheral portion which rises to a greater extent than the central portion during baking; and a frozen food insert comprising a sauce containing a thickener disposed over said central portion of said sheet of puff pastry dough, whereby the food insert will fill a recess formed as said peripheral portion of the sheet rises during baking to form a shell.

4,275,083

GASIFIED CANDY ENROBED WITH OLEAGINOUS MATERIAL

Frank P. Colten, Dover, Del.; Joseph J. Halik, Ossining; Robert J. Ravallo, Mahopac, both of N.Y.; Joseph L. Hegadorn, Ridgewood, N.J., and Richard B. Hynson, New Fairfield, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,483

Int. Cl.[3] **A23G** *3/00*

U.S. Cl. 426—96 **31 Claims**

1. A confection which comprises: an admixture of oleaginous material selected from the group consisting of chocolate, pastel, compound coating and peanut butter having a fat content of at least 20% and a gasified candy having a sizzling and/or popping sensation when eaten, having a particle size

distribution of −4 to +40 U.S. Sieve Series, having moisture content of 1–4% water and having 2 to 7 cm^3 of carbon dioxide gas per gram of candy, wherein said oleaginous material coats said candy which comprises 2–40% of the confection and is homogenously mixed therein.

4,275,084

FORMED FOOD PRODUCT OF MICROFIBRILLAR PROTEIN AND PROCESS FOR THE PRODUCTION THEREOF

Shuzo Ohyabu, Kurashiki; Syozi Kurosaki, Okayama; Keiji Matsumura; Hiroyuki Akasu, both of Kurashiki; Takeo Akiya, Takatsuki; Naoki Yagi, Suita; Kwang Y. Kim, Habikino; Tarushige Nakaji, Yao, and Akiko Miyanaka, Osaka, all of Japan, assignors to Kuraray Co., Ltd. and Minaminihon Rakuno Kyodo Kabushiki Kaisha, both of, Japan

Filed Dec. 11, 1979, Ser. No. 102,483
Claims priority, application Japan, Dec. 13, 1978, 53/155076
Int. Cl.³ A23J *3/00*
U.S. Cl. 426—104 **16 Claims**

1. A formed food product of microfibrillar protein, which comprises one part by weight of a bundle of microfibrillar protein (A) having a diameter of fiber 10μ or less and a heat resistant index of at least 100, and about 0.02 to 0.67 part by weight of a microfibrillar protein (B) having a diameter of fiber of 10μ or less and a heat resistant index of from 55 to the heat resistant index of the component (A)—10, wherein said heat resistant index is defined as the maximum temperature at which 90% or more of the microfibrils remain when the microfibrillar protein is kept in water of pH 5.5 at a fixed temperature for 30 minutes.

4,275,085

METHOD OF MAKING DRIP-TYPE COFFEE

Richard Gregg, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 23, 1976, Ser. No. 726,073
Int. Cl.³ A23F *5/26*
U.S. Cl. 426—433 **9 Claims**

1. In a drip coffee-making method for making varying amounts of coffee beverage primarily for immediate consumption, said method comprising passing a predetermined quantity of heated water through a drip brew basket-filter containing a bed of roasted and ground coffee over which said heated water is sprayed for drip extraction which heated water passes through said bed and through an aperture in said drip brew basket-filter into a container positioned below said drip brew basket-filter, the improvement comprising:

(a) dividing a predetermined quantity of water into an extraction portion and a bypass-dilution portion;

(b) passing said extraction portion of said water at a predetermined temperature of 120° F.–175° F. over said bed of roast and ground coffee at a sufficiently slow rate to cause a relatively strong filtered coffee extract to issue into said container; said extraction portion and said roasted and ground coffee having a weight ratio of from about 9:1 to about 14:1;

(c) diluting said relatively strong filter coffee extract in said container with said bypass-dilution portion of said water, wherein said bypass-dilution portion bypasses said bed of roasted and ground coffee and dilutes said filtered coffee extract to a predetermined beverage concentration; and

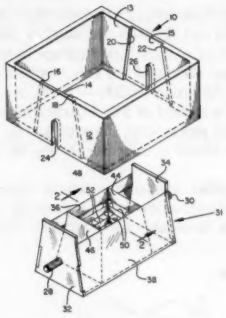
wherein said bypass-dilution portion of said water has a preselected temperature which upon dilution warms up the filtered coffee extract to a beverage serving temperature of about 170° F. to about 185° F.; and wherein a flavorful, ready-to-drink coffee beverage relatively low in bitterness is automatically provided.

4,275,086

METHOD OF PREPARING POTATO SEGMENTS

Roger A. Brown, Tigard, Oreg.; William F. Clyde, American Falls, Id., and Glenn D. Galusha, Moses Lake, Wash., assignors to AMFAC Foods, Inc., Portland, Oreg.

Continuation of Ser. No. 836,050, Sep. 23, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,947
Int. Cl.³ B02C *18/00*
U.S. Cl. 426—518 **3 Claims**



1. A method of cooking a mixture of elongated potato segments cut from various portions of a potato having a higher starch containing solids content in its outer portions than in its inner portion, comprising:

making a series of longitudinal cuts through said potato to divide it into multiple, elongated segments, said cuts being spaced a selected distance apart in said inner portion of said potato, and a distance apart greater than said selected distance in said outer portions of said potato, and said cuts being located to make the ratio of segment surface area to volume generally inversely proportional to the distance of a segment from the center of said potato;

combining said segments to form a mixture thereof; and,

blanching and cooking said mixture, whereby variations in segment texture, as measured by the amount of gelatinized starch per segment, are minimized, and segments of substantially the same texture are obtained.

4,275,087

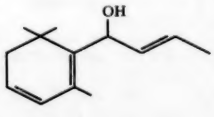
FLAVORING WITH 2,6,6-TRIMETHYL-α-PROPENYL-1,3-CYCLOHEXADIENE-1-METHANOL SUBSTANCES

Richard A. Wilson, Westfield; William L. Schreiber, Jackson; Braja D. Mookherjee, Holmdel, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, N.J.; Manfred H. Vock, Locust, N.J.; Gilbert Stork, Englewood, N.J., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 39,361, May 15, 1979. This application Feb. 8, 1980, Ser. No. 120,102
Int. Cl.³ A23L *1/226, 1/235*
U.S. Cl. 426—538 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising adding thereto from about 0.05 parts per million up to about 100 parts per million based on the total composition of a substance selected from the group consisting of:

(a) a mixture of compounds having the structures:



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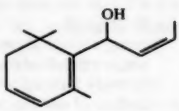
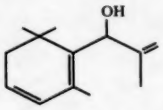
and



(b) a compound having the structure:



4,275,088

DRY MIX FOR LAYER CAKE CONTAINING CITRUS JUICE VESICLE SOLIDS

Patricia E. Hart, St. Paul, and Tisha Nichols, Osseo, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Feb. 7, 1979, Ser. No. 9,995
Int. Cl.[3] A21D *10/04*
U.S. Cl. 426—554 10 Claims

1. A cake mix of a layer-cake type which provides upon baking an enhanced moistness impression cake, comprising:

A. from about 35% to 45% by weight of said cake mix of wheat flour;

B. from about 40% to 54% by weight of said dry mix of sugar, said sugar being present in a weight ratio to flour of from about 1.20 to 1.35;

C. from about 6% to 16% by weight of emulsified shortening; said shortening containing from about 1% to 16% by weight of said shortening of a food grade emulsifier;

D. from about 0.2% to 10% by weight of processed juice vesicle solids, said processed juice vesicle solids having:

(1) a moisture content of from about 5% to 12%;

(2) a particle size of from about 50 to 400 microns; and

E. from about 0.5% to 4% of a chemical leavening agent.

4,275,089

PURIFICATION OF VEGETABLE OIL

George A. Kopas, 1607 - 35th Ave., San Francisco, Calif. 94122, and Merton E. Boomer, 4901 Stacy St., Oakland, Calif. 94605

Filed May 12, 1977, Ser. No. 796,447
Int. Cl.[3] A23D *5/02*
U.S. Cl. 426—601 6 Claims

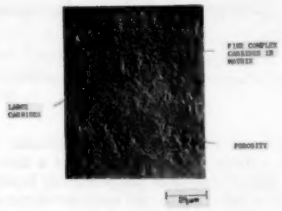
1. A process for producing a pumpable animal feed material including the steps of extracting vegetable oil from vegetable matter with a solvent for the oil, stripping solvent from the oil with steam at a pressure from 0 to 28 inches of Hg below atomspheric pressure and at a temperature such that without further addition of H_2O after steam stripping of the solvent, sludge hydrated to a H_2O content between 5 percent and 15 percent is formed, separating said sludge from said oil and combining said sludge with at least 15 percent acidulated oil feed fat.

4,275,090

PROCESS FOR CARBON BEARING MCRALY COATING

Charles C. McComas, Stuart; James W. Morris, Jupiter, and Larry S. Sokol, West Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 949,926, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 842,838, Oct. 17, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 85,132
Int. Cl.[3] B05D *1/10*
U.S. Cl. 427—34 5 Claims



1. A method of providing a coating having wear, corrosion, and oxidation resistance in a gas turbine environment, on a superalloy substrate, which comprises the steps of:

(a) mixing MCrAlY powders with Cr_3C_2 powders, wherein M is a metal selected from the group consisting of Ni, Co, Fe, or mixtures thereof, the powders having particle sizes less than 44 microns, with the Cr_3C_2 having a first average particle size and being present in sufficient quantity in the mixture to produce the composition and structure after spraying which is indicated in step (b);

(b) plasma spraying the powders so that they impinge on, adhere to the substrate, and interact during spraying to produce a coating which consists essentially of a MCrAlY matrix rich in carbon and containing fine carbides of the order of 1–2 microns size and coarse chromium carbides of the order of 12 microns size, the average size of the Cr_3C_2 carbides being smaller than the said first average particle size, and the coating having at least 0.6 weight percent carbon.

4,275,091

METHOD OF DUPLICATING PLASTICS INFORMATION CARRIERS

Gerardus J. M. Lippits; Arnoldus J. M. Van Den Broek; Adriaan J. G. Op Het Veld; Rinse Dijkstra, and Jelis De Jonge, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

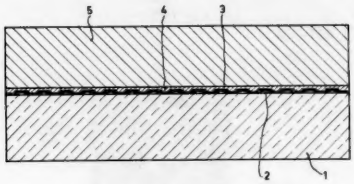
Continuation of Ser. No. 887,188, Mar. 16, 1978, abandoned, which is a division of Ser. No. 774,973, Mar. 7, 1977, abandoned. This application Nov. 16, 1979, Ser. No. 95,130
Claims priority, application Netherlands, Oct. 15, 1976, 7611395
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—53.1 15 Claims

1. The method of manufacturing a plastic information carrier containing an information track having detail of such fineness as to be suitable for reading by an optical beam or similar reading means, said fineness being as small as in the order of a micron or less, comprising:

(a) directly applying to a metal surface of a rigid, substantially flat die, which surface contains the negative of the desired information track, a thin layer of a thickness of 0.2–300 microns of a light-curable polymerizable liquid having a viscosity of from 1 to 100 cP and comprising low molecular weight acrylic monomers or a mixture of low molecular weight acrylic monomers and acrylic oligomers, which liquid contains 25–70% by weight of saturated hydrocarbon and/or phenyl groups, has an average

functionality in regard to unsaturatedness of between 2.1 and 6, is at least substantially aprotic and consists for at least 95% of monomers having a maximum average molecular weight of about 400;

(b) applying to the exposed surface of said thin layer of polymerizable liquid a thin light-pervious plastic substrate;



(c) exposing said thin layer of polymerizable liquid to light radiation through said substrate for a time sufficient to cause said thin layer of polymerizable liquid to cure to a solid state adhering to said substrate thereby producing a laminate of said substrate and said cured layer containing the desired optically readable information track readily removable from said die without effect on said laminate or said die; and

(d) removing said laminate from said die.

4,275,092

METHOD FOR PRODUCING A PLATE OR SHEET USEFUL IN PLANOGRAPHIC PRINTING

Hiroyuki Nakayama; Akira Kato, and Masuo Tsuchiya, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Continuation of Ser. No. 819,768, Jul. 28, 1977, abandoned. This application May 15, 1979, Ser. No. 39,308

Claims priority, application Japan, Jul. 30, 1976, 51-91464; Jun. 14, 1977, 52-70197; Jun. 14, 1977, 52-70198

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—54.1 **12 Claims**

1. A method for producing a plate or sheet useful in oil base ink planographic printing which comprises providing a substrate of an oleophilic resin having in the molecules thereof carbon-carbon double bonds and/or carbon atoms bonded with a single hydrogen atom in a total amount of not less than 0.05 mol/kg and having a contact angle with pure water above 40 degrees, non-mixingly contacting the substrate with hydrophilic radical polymerizable compound, wherein said hydrophilic radical polymerizable compound is a monomer capable of being dissolved in water or hydrophilic organic solvents or swollen by absorbing the water or the solvents in an amount of above 10% by weight at room temperature when converted to a homopolymer, and exposing the substrate contacted with the compound to actinic ray of 250 nm to 700 nm wavelength to form a hydrophilic thin layer chemically combined with the substrate, said thin layer having a contact angle with pure water of 20 degrees or less.

4,275,093

METHOD OF MANUFACTURING INSULATED GATE SEMICONDUCTOR DEVICES BY HIGH PRESSURE THERMAL OXIDATION WITH WATER VAPOR

Nobuo Sasaki; Yasuo Kobayashi, both of Kawasaki; Ryoiku Tohgei, Machida; Takashi Iwai, Kawasaki, and Motoo Nakano, Yokohama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Jun. 13, 1979, Ser. No. 48,069

Claims priority, application Japan, Jun. 14, 1978, 53-71616

Int. Cl.[3] H01L *21/316, 29/78*

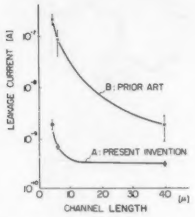
U.S. Cl. 427—89 **10 Claims**

1. A method of manufacturing an insulated gate type semiconductor device in an island of semiconductor material with a channel length of less than 40 microns and a low leakage current of less than 10^{-9} A at an applied source to drain potential of 5 volts and with an unbiased gate, said method comprising the steps of:

forming a single crystal semiconductor film on an insulating single crystal substrate;

selectively forming a film masking against oxidation on the surface of said single crystal semiconductor film, and

thermally oxidizing a part of said single crystal semiconductor film, in a region which is not masked with said film masking against oxidation, down to the surface of said



insulating single crystal substrate, to form said island by arranging said insulating substrate with said single crystal semiconductor film in a water vapor atmosphere having a pressure in the range from 3 to 15 kg/cm^2 and a temperature in the range from 700° C. to 1000° C., said oxidizing resulting in said device having said low leakage current;

forming source and drain regions of said device in said island to provide each channel length,

forming the gate insulator or said device over said channel region, and

forming gate, source and drain electrodes of said device.

4,275,094

PROCESS FOR HIGH PRESSURE OXIDATION OF SILICON

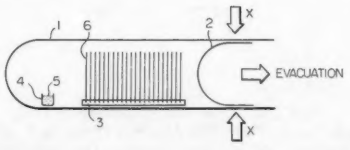
Mikio Takagi; Mamoru Maeda, both of Kawasaki, and Hajime Kamioka, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 30, 1978, Ser. No. 955,755

Claims priority, application Japan, Oct. 31, 1977, 52/130651; Oct. 31, 1977, 52/130652; Oct. 31, 1977, 52/130653

Int. Cl.[3] H01L *21/316*

U.S. Cl. 427—93 **14 Claims**



1. A process for high pressure oxidation of silicon with high uniformity of the oxide thickness comprising the steps of:

inserting a quartz vessel containing a predetermined amount of water into a quartz capsule in the form of a tube with one end closed;

spacing silicon wafers apart from each other in said quartz capsule;

evacuating said quartz capsule;

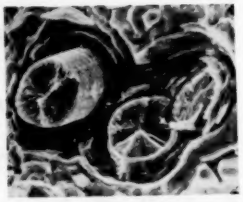
sealing said quartz capsule gas-tightly by fusing; and

heating said quartz capsule to an elevated temperature to generate a high pressure steam therein and to form an oxide film on said silicon wafers with said high uniformity.

4,275,095
COMPOSITE ARTICLE AND METHOD OF MAKING SAME

James W. Warren, Woodland Hills, Calif., assignor to Warren Consultants, Inc., Woodland Hills, Calif.

Filed Jul. 31, 1979, Ser. No. 62,401
Int. Cl.[3] C23C 11/08
U.S. Cl. 427—228 18 Claims



1. A method of making a composite article comprising the steps of:

(a) forming a starting substrate from a multiplicity of carbon fibers selected from a group consisting of pyrolyzed wool, rayon, polyacrylonitrile and pitch fibers;

(b) suspending said starting substrate within a first vacuum pressure controlled environment;

(c) forming an intermediate substrate by heating said starting substrate to a temperature of between approximately 1500° F. and approximately 4200° F. while exposing said starting substrate to a hydrocarbon gas to form a uniform layer of pyrolytic carbon about each of the fibers in said starting substrate;

(d) removing said intermediate substrate from said first controlled environment and forming it into a shaped substrate having the approximate shape desired of the end product composite article;

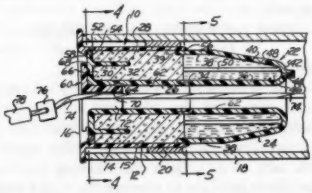
(e) supporting said shaped substrate in a second controlled environment while heating said shaped substrate to a temperature of between approximately 1800° F. and approximately 3200° F.; and

(f) forming a diffusion coated article in which said carbon fibers remain freely movable relative to the applied coatings by reacting said shaped substrate with a siliceous material for a period of time sufficient to permit the silicon to react with the pyrolytic carbon coating deposited on said fibers.

4,275,096
METHOD AND APPARATUS FOR DISPENSING FLUID IN A CONDUIT

Philip W. Taylor, Burnet, Tex., assignor to Taylor Industries, Inc., Marble Falls, Tex.

Continuation-in-part of Ser. No. 894,565, Apr. 7, 1978, Pat. No. 4,137,623. This application Jan. 15, 1979, Ser. No. 3,508
The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.
Int. Cl.[3] B05C 1/06; B05D 1/28, 7/22
U.S. Cl. 427—230 13 Claims

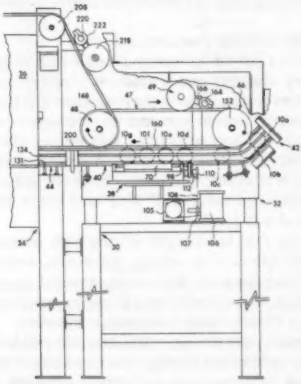


1. An apparatus for dispensing a fluid in an extended conduit comprising a cartridge-like structure made of a pair of coaxial assembled separate inner and outer members dispoed one within the other and insertable in an end of said conduit in a fixed position, means attaching the end of a pull strand to said inner member for separating said inner member from said outer member by pulling tension exerted by said pull strand, a resilient absorbent mass of cellular material supported by said inner member and normally compressibly held between said inner and outer members and capable when pulled from said outer member of expanding such as to be peripherally engaged with the wall of said conduit, means integral with said outer member adapted to retain said outer member in the conduit upon said separation, a supply of said fluid associated within said structure and adapted to be applied to said conduit by said expanded cellular material when moved through said conduit by said pull strand, and a nosepiece member integral with said inner member and defining a chamber containing an additional supply of said fluid.

4,275,097
PROTECTIVE COATING FOR CANS AND METHODS FOR APPLICATION OF COATING THERETO

Frank L. Shriver, Lakewood, Colo., assignor to Coors Container Company, Golden, Colo.

Division of Ser. No. 891,309, Mar. 29, 1978. This application Oct. 26, 1979, Ser. No. 88,531
Int. Cl.[3] B05D 1/28
U.S. Cl. 427—286 8 Claims



1. The method of applying a thin narrow width annular coating to a portion of the outer peripheral surface of a can body member comprising:

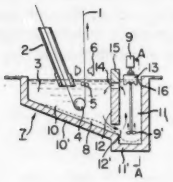
rotatably moving the can body member along a path of movement across an elongated rotating coating applicator roller member having a rotational axis extending parallel to the path of movement and transversely to the rotational axis of the can body member; and

engaging a narrow width portion of the periphery of the lower side wall portion of the can body member with a narrow width elongated portion of the periphery of the coating application roller during substantially only one revolution of the can body member during the movement thereof across the rotating coating application roller.

4,275,098
METHOD AND APPARATUS FOR CONTINUOUSLY HOT-DIP GALVANIZING STEEL STRIP

Naoki Gunji, and Saburo Ito, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,203
Claims priority, application Japan, Mar. 26, 1979, 54/34228
Int. Cl.[3] C23C 1/02
U.S. Cl. 427—345 7 Claims



1. A method for continuously hot-dip galvanizing a steel strip, which comprises the steps of:

continuously introducing a steel strip into a hot-dip galvanizing bath containing aluminum in a hot-dip galvanizing tank to subject said steel strip to a hot-dip galvanizing treatment; and, adjusting the thickness of a galvanized layer formed on the surface of said steel strip to a prescribed value directly above the surface of said hot-dip galvanizing bath to manufacture a hot-dip galvanized steel strip;

said method being characterized by:

providing a hot-dip galvanizing tank which is divided into a plating chamber and a reaction chamber by a vertical partition having a gap at the lowermost end thereof and an opening-adjustable aperture at the upper end portion thereof, the bottom wall of said plating chamber being inclined downwardly toward the bottom wall of said reaction chamber, said plating chamber and said reaction chamber communicating with each other through said gap and said aperture;

circulating said hot-dip galvanizing bath contained in said hot-dip galvanizing tank by convection, under the effect of stirring by a stirring means provided in said reaction chamber, through said gap and said aperture, between said plating chamber and said reaction chamber;

continuously introducing a steel strip into said hot-dip galvanizing bath in said plating chamber while continuing said stirring, to subject said steel strip to a hot-dip galvanizing treatment and also forming bottom dross ($FeZn_7$) in said plating chamber during said hot-dip galvanizing treatment which accumulates on the bottom of said plating chamber and flows down along the slant bottom wall of said plating chamber to the bottom of said reaction chamber;

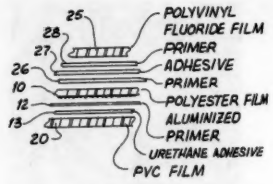
providing aluminum in said hot-dip galvanizing bath in said reaction chamber and actively reacting said bottom dross in said reaction chamber with said aluminum under the effect of said stirring by said stirring means, to convert said bottom dross into a surface dross (Fe_2Al_5) which floats to the surface; and

substantially removing said surface dross floating on the surface of said hot-dip galvanizing bath in said reaction chamber, from said reaction chamber, during said hot-dip galvanizing treatment.

4,275,099
METALIZED POLYESTER RESIN LAMINATE

Mahesh J. Dani, Newtown, Pa., assignor to Dunmore Corporation, Newtown, Pa.

Filed Nov. 5, 1979, Ser. No. 91,367
Int. Cl.[3] B60R 13/00, 21/14; C09J 5/04
U.S. Cl. 428—31 36 Claims



1. A process for the manufacture of laminated thin sheets having improved weathering properties which comprises bonding a metalized transparent polyester resin film to a polyvinyl chloride film sheet by an in-situ formed thermosetting polyurethane adhesive layer, wherein the metalized surface of said polyester film is primed with an applied coating comprising an acid modified vinyl chloride vinyl acetate copolymer.

20. The process of forming laminated thin sheets having improved weathering properties which comprises (1) applying to a vinyl copolymer primed metal surface of an aluminized polyester film, an adhesive layer of a thermosetting adhesive formed in-situ by reaction of polyisocyanates in organic solution with a polyester polyol, said polyester polyol being one formed by reaction of at least one glycol from the group consisting of butane diol and neopentyl glycol, with at least one dicarboxylic acid from the group consisting of isophthalic and terephthalic acids; and (2) bonding the adhesive containing film to a polyvinyl chloride backing film at said adhesive layer.

30. A thin flexible laminated structure comprising a film of aluminized transparent polyethylene terephthalate bonded at the metalized surface thereof to a vinyl film sheet by an intervening layer of a cured thermoset polyester-polyisocyanate adhesive composition, the opposite exposed surface of said aluminized film being coated with a weather resistant protective lacquer comprising a polyester resin, containing ultraviolet inhibitor; said polyester-polyisocyanate adhesive composition comprising the reaction product of at least one triisocyanate reacted with a condensation copolymer formed from at least one glycol compound from the group consisting of butanediol and neopentyl glycol and at least one dicarboxylic acid from the group consisting of isophthalic and terephthalic acids.

4,275,100
VIDEO DISC PROCESSING

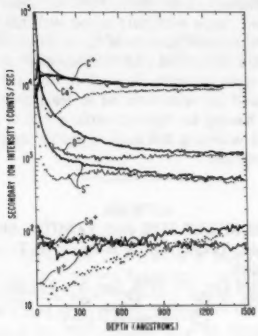
Pabitra Datta, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,206
Int. Cl.[3] B32B 3/02
U.S. Cl. 369—286 9 Claims

5. In a method of fabricating a high density information disc replica which comprises dry blending a polyvinylchloride resin with additives including stabilizers, lubricants and flow modifiers, compression molding to form a disc replica having water soluble salts on its surface and cleaning the disc replica with a water based solution to remove the water soluble salts from the surface of the disc, the improvement which comprises

employing as said solution an aqueous solution comprising an oxidizing agent, a base and a sufficient amount of a

fluorosurfactant so that the solution has a surface energy of about 35 dynes/cm^2 or less.



9. A video disc as prepared by the method of claim 5 having a fluorinated surface.

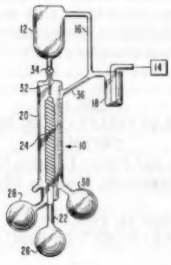
4,275,101
VIDEO DISC LUBRICANTS

Chih C. Wang, Hightstown; Lincoln Ekstrom, Princeton; Thomas C. Lausman, Cranbury, all of N.J., and Henry Wielicki, Wyndmoor, Pa., assignors to RCA Corporation, New York, N.Y.

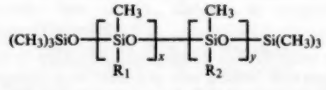
Continuation of Ser. No. 937,819, Aug. 29, 1978, abandoned. This application Aug. 9, 1979, Ser. No. 65,065

Int. Cl.^{3} B32B *3/02;* **G11B** *5/74*

U.S. Cl. 369—286 **11 Claims**



1. In a video information record, adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a methyl alkyl siloxane lubricant coating, the improvement which comprises utilizing as said lubricant, a composition of the formula



wherein R_1 and R_2 are alkyl groups of 4–20 carbon atoms, x is an integer of 2–4, y is an integer of 0–2, and wherein the sum of x plus y is 4 or less wherein said composition has a distillation range of from about 100°–205° C. at 10^{-5} torr and wherein said composition is free of antioxidant.

4,275,102
METHOD FOR MANUFACTURING A PANEL OF ANISOTROPIC CERAMIC GLASS

Felix Trojer, Chene-Bourg, and John Briggs, Onex, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Continuation-in-part of Ser. No. 707,756, Jul. 22, 1976, abandoned. This application Jan. 20, 1978, Ser. No. 870,882

Claims priority, application Switzerland, Jul. 22, 1975, 9557/75

Int. Cl.^{3} B32B *7/00, 17/00*

U.S. Cl. 428—119 **8 Claims**

1. A panel of anisotropic material comprising an array of acicular ferro-electric crystals enclosed in a ceramic or vitreous matrix, said acicular crystals being oriented perpendicularly to the panel faces and traversing the panel from one face to the other, wherein said panel is prepared from a starting composition consisting essentially of the following mineral compounds within the limits of the following proportions which are expressed in parts by mole:

BaO	25 to 42
TiO_2	28 to 50
SiO_2	2 to 30
SrO	0 to 10
Al_2O_3	0 to 8
La_2O_3	0 to 7
P_2O_5	0 to 3

whereby said acicular ferroelectric crystals comprise at least one titanate of a metal selected from the group consisting of barium, strontium and lanthanum or a mixed titanate of these metals.

4,275,103
ELECTROGRAPHIC RECORDING MEDIUM WITH CONDUCTIVE LAYER CONTAINING METAL OXIDE SEMICONDUCTOR

Shigeru Tsubusaki; Nobuo Sonoda, and Wataru Shimotsuma, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 5, 1979, Ser. No. 54,901

Claims priority, application Japan, Jul. 12, 1978, 53-85590; Jul. 31, 1978, 53-94058

Int. Cl.^{3} B32B *3/00, 21/06*

U.S. Cl. 428—148 **14 Claims**

1. An electrographic recording medium comprising:

a paper or plastic support; and

a conductive layer and a dielectric layer formed on said support in this order, said conductive layer comprising a dispersion of fine particles of at least one n-type metal oxide semiconductor selected from the group consisting of SnO_2, In_2O_3 and ZnO and whose resistivity is in the range of below 10^4 Ω-cm when compressed under a pressure of 70 kg/cm^2, in an organic binder comprising a polymeric electrolyte of high molecular weight, or a

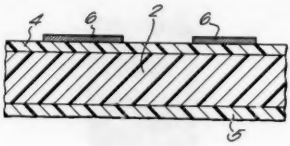
mixture of the polymeric electrolyte with a non-conductive polymer, the surface resistivity of said conductive layer being in the range of from 10^6 Ω to 10^8 Ω under conditions of a relative humidity of about 65% and room temperature.

4,275,104

DRY TRANSFER SYSTEM

Erno N. de Nagybaczon, Montreal, Canada, assignor to International Hona NV, Bonaire, Netherlands Antilles

Filed May 23, 1979, Ser. No. 41,664
Claims priority, application United Kingdom, May 31, 1978, 24832/78
Int. Cl.³ B41M *3/12*; B44C *1/16*; B32B *3/18*
U.S. Cl. 428—195 **26 Claims**



1. A dry transfer system for transferring indicia to a receiving surface, comprising (a) a flexible carrier substrate having front and rear surfaces and (b) a film of indicium-forming material defining a preformed image and adhering to at least a portion of the front surface of the carrier substrate, characterised in that:

the film of indicium-forming material is cohesive, pliable, capable of plastic deformation, and not more than 10 micrometers in thickness;

the carrier substrate is dimensionally stable, and at least the front surface of the substrate is composed of a material whose surface possesses adhesive properties and is sufficiently smooth, that when no adhesive is present,

(A) the carrier substrate is nevertheless capable of releasing the film of indicium-forming material to a receiving surface in close contact therewith on application of a pressure transmitted to deform the film so that this film intimately conforms to the receiving surface and remains transferred thereto; but

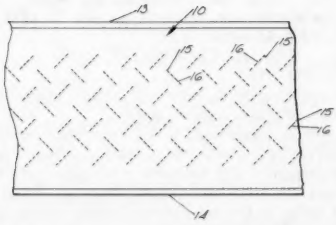
(B) the carrier substrate is still capable of retaining said indicium-forming material adherent to the front surface of the carrier substrate when in said close contact with the receiving surface in the absence of said pressure.

4,275,105

STABILIZED RAYON WEB AND STRUCTURES MADE THEREFROM

William J. Boyd, and Mary K. King, both of Memphis, Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Jun. 16, 1978, Ser. No. 916,220
Int. Cl.³ B32B *27/14*
U.S. Cl. 428—198 **45 Claims**



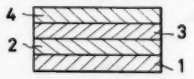
1. An absorbent, nonwoven, stabilized web comprising a binderless nonwoven rayon web having a substantial Z direction fiber orientation with a nonwoven web of thermoplastic material melted into said rayon web from one surface of said rayon web to a penetration depth of from about 10% to about 40%, and preferably from about 10% to about 25% of the thickness of said rayon web, said rayon web having an initial basis weight before stabilization of from about 20 to about 75 grams per square meter and said thermoplastic web having an initial basis weight of from about 5 to about 25 grams per square meter and an open area of at least about 40%, said stabilized web having an exposed surface free of said thermoplastic material whereby the surface aesthetics of said rayon web are undisturbed.

4,275,106

TRANSFER SHEET FOR POLYAMIDE ARTICLES

Tadao Watanabe, Tokyo, Japan, assignor to Toppan Printing Co., Ltd., Japan

Filed Oct. 30, 1978, Ser. No. 955,949
Claims priority, application Japan, Nov. 1, 1977, 52/131363
Int. Cl.³ B41M *3/12*
U.S. Cl. 428—200 **16 Claims**



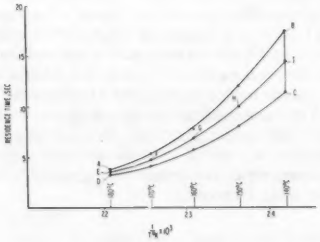
1. A heat release decalcomania for polyamide articles comprising a backing material layer, a design layer comprising a film forming component and a coloring pigment, and an adhesive layer on said design layer, said adhesive layer consists essentially of (a) 30 to 90 parts by weight of nitrocellulose having a degree of nitration of from about 10 to about 14%, a degree of polymerization of from about 40 to about 450 and a specific gravity of from about 1.5 to about 1.6, and (b) 70 to 10 parts by weight of a member selected from the group consisting of phthalic ester plasticizers, fatty acid ester plasticizers, phosphoric ester plasticizers, epoxy plasticizers, alkyd resins, maleic acid resins and mixtures thereof.

4,275,107

POLYESTER STABILIZATION PROCESS AND PRODUCT

Edward A. Bartkus, and Robert L. Price, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 19, 1980, Ser. No. 150,830
Int. Cl.³ B29D *7/22*; B29C *25/00*
U.S. Cl. 428—220 **11 Claims**



1. A method of heat treating an axially-oriented heatset polyester whereby low temperature shrinkage is negligible which comprises heating said polyester to a temperature of about 140° to about 180° C. for a time between about 15 seconds and about 3 seconds, as defined by the area in FIG. 1 delineated by points A, B, C and D, under tension of less than about 350 psi in its longitudinal dimension and impinging

heated gas on the film so as to heat said film to the above temperature and to buoy the film and keep it out of contact with any solid surface during the heat treatment at about 140° to 180° C.

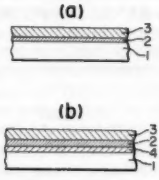
10. An axially-oriented heat set polyester of negligible low temperature shrinkage obtained by the process of claim 1.

4,275,108

LEADER OR TRAILER TAPE FOR A MAGNETIC TAPE

Nobutana Yamaguchi; Satoru Takayama; Masahiro Utumi, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Continuation of Ser. No. 936,045, Aug. 23, 1978, abandoned, which is a continuation of Ser. No. 829,493, Aug. 31, 1977, abandoned. This application Oct. 9, 1979, Ser. No. 82,905
Claims priority, application Japan, Sep. 6, 1976, 51-105773
Int. Cl.³ B32B *17/08*
U.S. Cl. 428—220 **12 Claims**



1. A leader or trailer tape for a magnetic tape and which consists of a plastic support member and, on one side thereof, a laminated coating consisting of (1) as a first layer, an electrically conductive layer having a thickness of 0.1 to 5 microns and having a surface electric resistance of at most $10^{10}\Omega$/sq, said electrically conductive layer being an electrically conductive resin selected from the group consisting of polycationic resins, quaternary ammonium resins and mixtures of cationic surfactants and plastic resins, and (2) a protective layer having a thickness of 1 to 10 microns covering said first layer and consisting essentially of a pigment and a binder as a second layer with a pigment to binder ratio of 6 to 1–0.5 to 1, said pigment having a grain size of 0.02 to 10 microns, the percent photo-transmission of said leader or trailer tape being 20 to 90%.

4,275,109

SHEET-LIKE INSULATION

Raymond C. Urban, Ballston Lake, and Robert W. Quinlan, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,142
Int. Cl.³ B32B *7/00, 27/04, 27/22*
U.S. Cl. 428—273 **13 Claims**

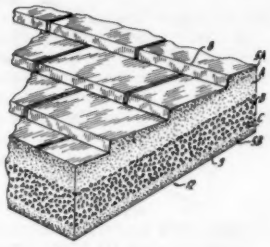
1. A sheet-like insulation adapted for use in cooler-running dry type transformers, said insulation comprising woven glass fabric impregnated with a lightly plasticized alkyd-type resin, wherein the plasticizer is a non-reactive plasticizer.

4,275,110

SELF-SUPPORTING BUILDING ELEMENTS AND METHOD OF MANUFACTURE

Gilbert C. A. Margerie, 65, av. de la Motte Picquet, Paris, France (F-75015)

Division of Ser. No. 740,912, Nov. 11, 1976, abandoned. This application Apr. 2, 1979, Ser. No. 26,327
Claims priority, application Switzerland, Nov. 11, 1975, 14702/75
Int. Cl.³ E04C *2/04;* B32B *5/18, 13/00*
U.S. Cl. 428—305 **17 Claims**



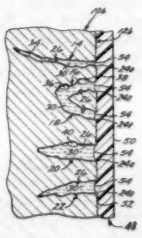
7. A discrete concrete construction element having layers of different densities, at least one outside layer comprising an hydraulic binding material and light aggregates, wherein a resin and a silane are present in the binding material.

4,275,111

CORROSION PROTECTION STRUCTURE

Roger Lovell, P.O. Box 981, Palacios, Tex. 77465

Continuation-in-part of Ser. No. 783,467, Mar. 31, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 587
Int. Cl.² B32B *3/26*
U.S. Cl. 428—306 **21 Claims**



1. Corrosion protection structure for a metal body having outer surface means and pore means communicating with said outer surface means, which comprises:

inner protective material that is substantially impervious to atmospheric corrosive agents disposed within said pore means, said outer surface means being substantially free of said inner material, and

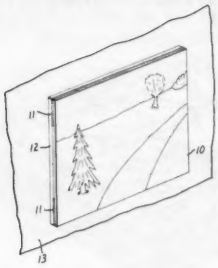
outer protective material which is different from said inner material and is in solid state that is substantially impervious to atmospheric corrosive agents and to said inner material forming a covering over said outer surface means and said pore means, said covering being intimately bonded to said outer surface means and bridging over said pore means.

4,275,112

SUPPORT FOR DECORATIVE AND COMMUNICATIVE MATERIAL

Erle B. Savage, Jr., Wayzata, Minn., assignor to Ionic Controls, Inc., Woodbury, Minn.

Filed Aug. 28, 1978, Ser. No. 937,410
Int. Cl.[3] B32B *5/18, 7/06*
U.S. Cl. 428—310 4 Claims



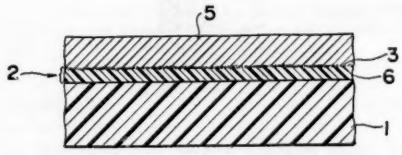
1. A decorative hanging adapted to be attached to a supporting substrate by electrostatic attraction and comprising a decorative sheet material and, as a supporting medium therefor, a thin, insulative, smooth-surfaced, minutely cellular, closed cell, unitary plastic web of crosslinked polyalkylene polymer having latent charge retentivity as induced by irradiation crosslinking, having a bulk density of about two pounds per cubic foot, a thickness of about 1/16 to $\frac{1}{2}$ inch, and a dissipation factor of about 0.0008 to 0.0001, and said web having been electrostatically charged.

4,275,113

MAGNETIC RECORDING MEDIUM

Osamu Saito; Jozo Shimizu, and Hiroshi Zaitsu, all of Ibaraki, Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Oct. 17, 1979, Ser. No. 85,585
Claims priority, application Japan, Oct. 17, 1978, 53/128148; Oct. 17, 1978, 53/128149; Dec. 19, 1978, 53/157841
Int. Cl.[3] H01F *1/00*
U.S. Cl. 428—323 6 Claims



1. A magnetic recording medium comprising a carrier sheet consisting of a non magnetic film, at least one adherently bonded intermediate layer formed on the carrier sheet and a magnetic layer formed on the intermediate layer, said intermediate layer being composed of resinous polymeric material including electrically conductive material made of particles of carbon black having a specific surface area of not less than 700 m^2/g and an oil absorption of not lower than 300 ml (DBP)/100 g, said carbon black being contained in the intermediate layer within the range of 5 to 30% by weight, wherein said electrical conductive material is biased in the intermediate layer towards the magnetic layer.

4,275,114

MAGNETIC RECORDING MEDIUM AND METHOD OF STABILIZATION OF CHROMIUM DIOXIDE MAGNETIC PIGMENTS

Eduard Schoenafinger, Jenesien, Italy; Herbert Motz, Ludwigshafen, Fed. Rep. of Germany; Manfred Ohlinger, Frankenthal, Fed. Rep. of Germany; Paul Deigner, Weisenheim, Fed. Rep. of Germany, and Werner Grau, Willstaett, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 10, 1977, Ser. No. 776,224
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617809
Int. Cl.[3] B32B *5/16*
U.S. Cl. 428—328 6 Claims

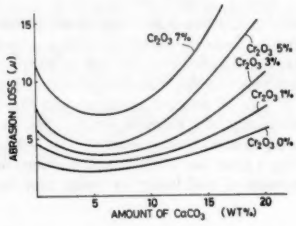
1. A process for stabilizing chromium dioxide magnetic particles against loss of their magnetic properties which comprises: suspending the chromium dioxide particles in a medium chosen from water, aliphatic alcohols of 1 to 4 carbon atoms and mixtures of water with the said alcohols, treating the suspended particles by adding to the suspension from 1 to 40% by weight, based on the chromium dioxide, of a block copolymer consisting of siloxane units and alkyleneoxy units of 2 to 4 carbon atoms, the alkyleneoxy units being bonded to the polysiloxane radical by a Si—O—C or Si—C group, separating the particles from the suspension, drying the particles at a temperature of from 50° to 200° C., whereby the block copolymer is bonded to the surface of the chromium dioxide particles.

4,275,115

MAGNETIC RECORDING COMPOSITION AND ARTICLE COATED THEREWITH

Tunehide Naruse, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 27, 1979, Ser. No. 34,284
Claims priority, application Japan, Apr. 29, 1978, 53/50962
Int. Cl.[3] C04B *35/04*
U.S. Cl. 428—329 7 Claims



1. A magnetic recording composition comprising a non-aqueous dispersion, in a liquid dispersion medium, of a dispersed solid phase of a major proportion of a magnetic powder and a minor proportion of a three-component non-magnetic powder system comprised of two types of non-magnetic powders each having an average particle size below 2μ, one type having a Mohs' hardness greater than or equal to 7 and being contained in an amount of from 1 to 5 wt.% of said magnetic powder; and the other type having a Mohs' hardness less than 7 but greater than about 3 and being contained in an amount of from 7 to 15 wt.% of said magnetic powder; said three-component system being comprised of two kinds of said one type of the non-magnetic powders and one kind of said other type of the non-magnetic powders.

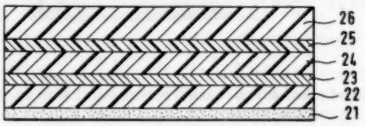
6. A magnetic video recording article comprising a base coated with the composition of claim **1** or **5**.

7. A magnetic video recording article according to claim **6** wherein said base is a polyester film.

4,275,116
METALLIZED HOT STAMPING FOIL FOR DECORATING THREE-DIMENSIONAL OBJECTS

Horst D. Krätschmer, Seukendorf, Fed. Rep. of Germany, assignor to Leonhard Kurz, Furth, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,009
Claims priority, application Japan, Jun. 6, 1978, 53-68247
Int. Cl.³ C09J *7/02*
U.S. Cl. 428—336 **4 Claims**

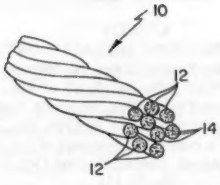


1. A metallized hot stamping foil for decorating three-dimensional objects consisting essentially of a thermoadhesive layer, a first lacquer layer, a metal layer, a second lacquer layer, a release layer and a carrier laminated in said order, the laminate of said first lacquer layer, metal layer and second lacquer layer having a ductility represented by an elongation rate ranging from 1.5 to 4.0.

4,275,117
STRING CONSTRUCTION PRODUCED BY SUBJECTING A FIBROUS STRAND COMPOSED OF FIBROUS MATERIALS HAVING DIFFERING MELTING POINTS TO HEATING CONDITIONS SUFFICIENT TO MELT SOME BUT NOT ALL OF THE FIBROUS MATERIALS

Steven J. Crandall, Quonochontaug, R.I., assignor to Ashaway Line & Twine Mfg. Co., Ashaway, R.I.

Continuation-in-part of Ser. No. 830,349, Sep. 2, 1977, abandoned. This application May 22, 1978, Ser. No. 909,212
Int. Cl.³ B32B *27/02;* **D02G** *3/04, 3/36, 3/40*
U.S. Cl. 428—373 **28 Claims**



1. An integrated string construction resulting from the integration under heating conditions of a combination of elongated strands of first and second thermoplastic material, said first thermoplastic material having a substantially higher melting point than said second thermoplastic material, said string having been integrated by the application of heat sufficient to melt said second material, but not said first material, said string, prior to integration, having compressed a core consisting at least in part of said second material, and a braided sheath over said core comprising strands of both said first and second materials.

6. An integrated string construction resulting from the integration under heating conditions of a combination of elongated strands of first and second thermoplastic material, said first thermoplastic material having a substantially higher melting point than said second thermoplastic material, said string having been integrated by the application of heat sufficient to melt said second material, but not said first material, said string, prior to integration, having comprised a core consisting entirely of said second material, and a sheath consisting entirely of said first material surrounding said core.

7. An integrated string construction resulting from the integration under heating conditions of a combination of elongated strands of first and second thermoplastic material, said first thermoplastic material having a substantially higher melting point than said second thermoplastic material, said string having been integrated by the application of heat sufficient to melt said second material, but not said first material, said string, prior to integration, having comprised a core consisting of a plurality of filamentous strands of said first material twisted together with one or more filamentous strands of said second material, and a sheath comprising at least in part said second thermoplastic material surrounding said core.

24. The method of making an integrated string comprising the following steps:

(a) forming a core of a first thermoplastic material;

(b) applying a sheath comprising at least in part a second thermoplastic material over said core characterized in that said first material has a substantially higher melting point than said second material;

(c) integrating said sheath and core by applying heat to said string sufficient to melt said second material, but not said first material.

4,275,118
PIGMENT-FREE COATINGS WITH IMPROVED RESISTANCE TO WEATHERING

Ronald H. Baney, and Frank K. Chi, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 3,188, Jan. 15, 1979, abandoned. This application May 2, 1979, Ser. No. 35,353
Int. Cl.³ B32B *27/36*
U.S. Cl. 428—412 **27 Claims**

1. A composition of matter comprising a dispersion of colloidal silica and colloidal titania, said colloidal particles having a particle size falling in the range of 5 to 150 millimicrons, in a water-alcohol solution of the partial condensate of a silanol having the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms, the gammachloropropyl radical, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gammaglycidoxypropyl radical, the gammamethacryloxypropyl radical, the gammamercaptopropyl radical and the phenyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 5 to 50 weight percent solids, said solids consisting essentially of 1 to 10 weight percent of said colloidal titania, 20 to 56 weight percent colloidal silica and 34 to 79 weight percent of said partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.0 to 6.0.

19. An article comprising a solid substrate coated with the composition of claim **1** and then cured.

4,275,119
HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF OLEFIN COPOLYMER OR INTERPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Oct. 5, 1979, Ser. No. 82,343
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—516 **8 Claims**

1. A multiple-layer, heat-sealable film comprising:

(a) a substrate layer consisting essentially of a homopolymer of polypropylene, a copolymer of polypropylene, or a blend of said homopolymer or copolymer containing up to 40% by weight of a different compatible polyolefin; and

(b) on at least one of the surfaces of the substrate layer, a surface layer comprising

an interpolymer of 1–90 mole percent of propylene, 1–98 mole percent of an alpha-olefin having four or more carbon atoms, and 1–98 mole percent of a different alpha-olefin having four or more carbon atoms.

4,275,120
HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND AN ETHYLENE OR A PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,358

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—516 **8 Claims**

1. A multiple-layer, heat-sealable film comprising

(a) a substrate layer consisting essentially of a homopolymer of polypropylene, a copolymer of polypropylene, or a blend of said homopolymer or copolymer containing up to 40% by weight of a different compatible polyolefin; and

(b) on at least one of the surfaces of the substrate layer, a surface layer comprising

a blend of 5–19 weight percent of poly(1-butene), and 95–81 weight percent of a copolymer of propylene (80–95 mole percent) and 1-butene (20–5 mole percent).

4,275,121
CARBONLESS DUPLICATING AND MARKING SYSTEMS UTILIZING INDOLYL-SUBSTITUTED FURANONE COLOR FORMERS

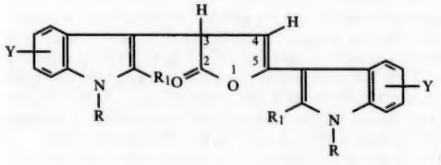
Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 829,002, Aug. 30, 1977, abandoned, which is a division of Ser. No. 651,607, Jan. 22, 1976, Pat. No. 4,075,224. This application Jul. 19, 1979, Ser. No. 58,960

Int. Cl.³ B41M *5/16*

U.S. Cl. 428—537 **11 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal paper marking system comprising a support sheet coated with a layer containing as a color-forming substance a 3,5-bis-(1-R-2-R_1-5/6-Y-3-indolyl)-2(3H)-furanone having the formula



1

wherein:

R represents hydrogen, non-tertiary alkyl of one to eight carbon atoms, alkenyl of two to four carbon atoms, benzyl or benzyl substituted in the benzene ring by one or two of halo or alkyl of one to three carbon atoms;

R_1 represents hydrogen, alkyl of one to three carbon atoms or phenyl; and

Y represents one or two of hydrogen, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms, halo or nitro.

4,275,122
SHAFT AND UNIVERSAL JOINT MEMBER ASSEMBLY

Leslie G. Fisher, Birmingham, England, assignor to GKN Transmissions Limited, England

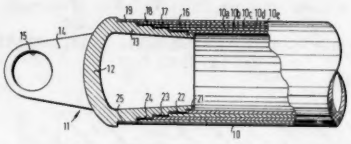
Filed Jul. 13, 1979, Ser. No. 57,486

Claims priority, application United Kingdom, Jul. 17, 1978, 30067/78

Int. Cl.³ F16D *1/06*

U.S. Cl. 428—542 **5 Claims**

1. An assembly of a universal joint member and a shaft, said shaft including a plurality of radially superimposed layers of fibre reinforced resin material, the joint member and shaft having axially inter-fitting parts and an adhesive bond being established between the joint member and shaft by inclusion of an adhesive substance therebetween, said axially inter-fitting



parts of the joint member and shaft being of stepped configuration whereby said adhesive bond is established with a plurality of said layers of material of the shaft in generally cylindrical areas at different radii.

4,275,123
HOT-CATHODE MATERIAL AND PRODUCTION THEREOF

Charley Buxbaum, Baden; Gernot Gessinger, Birmenstorf, and Sigfrid Strassler, Wettingen, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 3, 1979, Ser. No. 26,547

Claims priority, application Switzerland, May 5, 1978, 4889/78

Int. Cl.³ B22F *5/00*

U.S. Cl. 428—547 **12 Claims**

1. A hot-cathode in wire or sheet form, comprising a core zone and at least one surface layer, said zone and layer containing a mixture of a high-melting carrier metal, an oxide of a Group IIIb metal as an activator and a carbide of the carrier metal as a reducing agent, wherein the concentration of the activator in the surface layer is less than that in the core zone so that the rate of diffusion of the activator from the core zone is equal or greater than the class of activator from the surface layer.

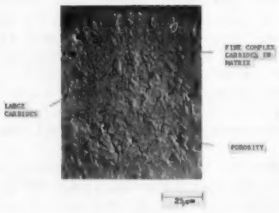
4,275,124
CARBON BEARING MCRALY COATING

Charles C. McComas, Stuart; James W. Morris, Jupiter, and Larry S. Sokol, West Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 949,926, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 842,838, Oct. 17, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 85,131

Int. Cl.³ B05D *1/10*

U.S. Cl. 428—564 **5 Claims**



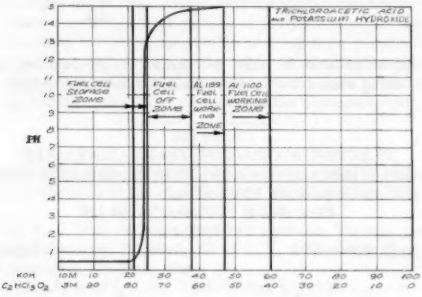
1. A superalloy article having a wear resisting and oxidation corrosion protective coating consisting essentially of a carbon rich MCrAlY matrix having fine transition metal carbides of the order of 1–2 microns size and coarser chromium carbides of the order of 12 microns size, produced by plasma spraying MCrAlY and Cr_3C_2 powders having particle sizes less than 44 microns, the coating having a carbon content of at least 0.6

weight percent wherein M is one or more of nickel, cobalt and iron.

4,275,125
FUEL CELL

Ralph C. Struthers, Saugus, Calif., assignor to Universal Fuel Systems, Inc., Saugus, Calif.

Filed Mar. 3, 1980, Ser. No. 126,686
Int. Cl.³ H01M *12/06*
U.S. Cl. 429—29 **11 Claims**

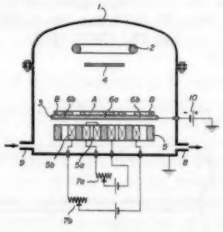


1. A fuel-air cell comprising a container, a metal fuel anode in the container, a cathode of porous conductive material dissimilar from the metal of the anode with a portion in the container in spaced relationship from the anode and a caustic fluid electrolyte in the container between and contacting the anode and cathode; the electrolyte is comprised of a mixture of base material in aqueous solution, selected from base materials having equivalent ionic conductance values of 180 or higher when tested in concentrations of 0.05 M and an acid material in aqueous solution which is selected from those acid materials having equivalent ionic conductance values of 100 or higher when tested in concentrations of 0.05 M and proton transfer reaction (PK_1) values less than 1.0.

4,275,126
FUEL CELL ELECTRODE ON SOLID ELECTROLYTE SUBSTRATE

Erich Bergmann, Bienne, Switzerland, and Gerard Horlaville, LaMotte-Cernex, France, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Apr. 11, 1979, Ser. No. 29,158
Claims priority, application Switzerland, Apr. 12, 1978, 3903/78; Feb. 22, 1979, 1770/79
Int. Cl.³ H01M *8/10*
U.S. Cl. 429—30 **7 Claims**

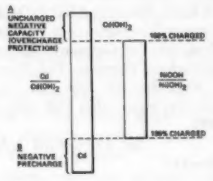


1. An electrode for removable fuel cells comprising:
a solid electrolyte substrate and
deposited on said solid electrolyte substrate, at least one layer of electrically conducting material having a total thickness ranging from 0.01μ to 85μ, said layer composed of a solid mixture of metals, metal oxides, or mixtures thereof in compressed form or in the form of agglomerated, fine particles:
wherein said layer of electrically conducting material is uniform and invariable over the entire surface area of said solid electrolyte substrate;
wherein the thickness of said layer of electrically conducting material may vary while the dimensions and properties of the particles of the components of said layer of electrically conducting material, taken individually, are homogeneous; and
wherein said layer of electrically conducting material is applied to said solid electrolyte substrate by cathode sputtering.

4,275,127
SEALED NICKEL-CADMIUM BATTERY WITH SELF-REGULATING PRECHARGE ADJUSTMENT CAPABILITY

Paul F. Ritterman, Granada Hills, and Richard H. Sparks, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 19, 1979, Ser. No. 50,046
Int. Cl.³ H01M *10/34*
U.S. Cl. 429—50 **6 Claims**



1. In a sealed nickel-cadmium battery cell having a sealed casing containing positive and negative electrodes spaced by intervening porous separators, the improvements comprising:
a hydrogen getter within said cell selected from the group consisting of:

$CaNi_5$	FeTi	$Ca_{0.7}MM_{0.3}Ni_5$ MM $Ni_{4.5}$ $Al_{0.5}$
$N_{15}MM_{0.1}Ca_{0.9}$	$(Fe_{0.9}Mn_{0.1})$	$Ca_{0.2}MM_{0.8}Ni_5$
$Ni_{4.3}Mn_{0.7}MM$	$(Fe_{0.8}Ni_{8.2})Ti$	$CaNi_{4.7}Al_{0.3}$

containing means comprising a sealed porous capsule containing said getter in the cell in a manner such that the getter is electrically isolated from said electrodes and exposed to the cell interior, whereby said cell may be overdischarged at a relatively high rate to reduce negative precharge and increase uncharged negative capacity in the cell without excessive hydrogen pressure buildup in the cell.

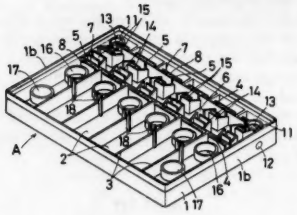
4,275,128
COVER APPARATUS FOR MONOBLOCK STORAGE BATTERY

Ichiro Sano, Yokohama, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Jan. 7, 1980, Ser. No. 110,382
Claims priority, application Japan, Jan. 20, 1979, 54/4466
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—88 **1 Claim**

1. A cover apparatus for a monoblock storage battery comprising a case-shaped cover plate; cell partition walls partitioning the interior of the cover plate into plural cell chambers; mutually facing walls on the reverse surface of the cover plate and extending across said cell partition walls, at least one of the facing walls being provided with ventilation openings corre-

sponding to the respective cell chambers, so that a space between the facing walls is formed into a common exhaust passage which is in communication with the respective cell chambers through the respective ventilation openings; baffle walls



provided outside the respective ventilation openings so as to leave respective gaps therebetween; a covering wall covering the lower surface of the common exhaust passage; and a covering wall covering the lower surfaces of the respective gaps.

4,275,129

GALVANIC HIGH-TEMPERATURE CELL WITH SOLID NEGATIVE ELECTRODE AND MOLTEN ELECTROLYTE

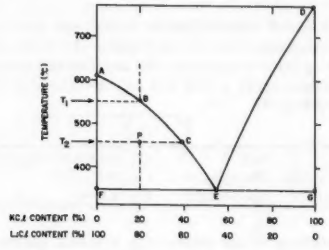
Wolfgang Kappus, Viernheim, and Waldemar Borger, Kelkheim, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,482

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2924992

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—112 **7 Claims**



1. Galvanic high-temperature cell with solid negative electrode and molten electrolyte comprising a mixture of at least two salts, wherein

the molten electrolyte contains at the operating temperature of the cell a solid phase formed through partial precipitation of least one of the components of the salt mixture.

4,275,130

BIPOLAR BATTERY CONSTRUCTION

Wally E. Rippel, Sierra Madre, and Dean B. Edwards, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 27, 1979, Ser. No. 79,476

Int. Cl.³ H01M *6/48*

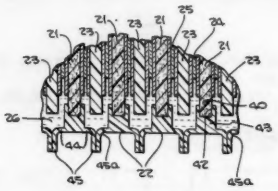
U.S. Cl. 429—144 **31 Claims**

19. A biplate for a battery comprising:

a sheet of nonconductive, synthetic organic resin binder material having randomly dispersed therein conductive fibers;

a plurality of spaced, parallel lead stripes applied to opposed faces of the sheet and in electrical contact with said fibers;

the facial areas between said stripes on one of said faces being coated with a corrosion resistant resin; and



the facial areas between said stripes on the opposed face being coated with a resin impermeable to electrolyte.

4,275,131

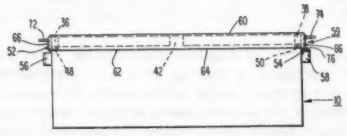
ELECTRIC STORAGE BATTERY CONTAINER

Donald K. Richards, Wyomissing Hills, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Oct. 2, 1979, Ser. No. 81,225

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—163 **13 Claims**



1. An improved container for a lead-acid battery, said container comprising:

a. a tray for receiving at least one lead-acid battery cell therein, said tray having at least three side walls and a bottom, at least two of said side walls each having at least one cover support member extending upwardly therefrom;

b. a cover comprising a planer lid having a downwardly depending flange along at least a portion of the perimeter thereof whereby said flange extends downwardly over said cover support members along at least a portion of each of at least two sides of said tray; and

c. means for spacing said flange from said side walls.

4,275,132

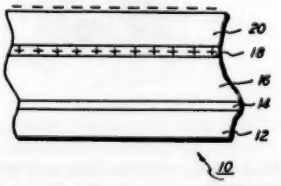
DIELECTRIC OVERCOATED PHOTORESPONSIVE IMAGING MEMBER AND IMAGING METHOD

Joseph Y. C. Chu, Fairport, and Simpei Tutihasi, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 905,250, May 12, 1978. This application May 29, 1979, Ser. No. 43,400

Int. Cl.³ G03G *13/22*

U.S. Cl. 430—31 **12 Claims**



1. An electrophotographic imaging method comprising providing a photoreceptor comprising in the stated order a

substrate; a layer of charge carrier injecting material dispersed in a polymer, the material being selected from the group consisting of carbon black and graphite; a layer of charge carrier transport material capable of transporting holes and injecting holes into a layer of charge carrier generating material which is capable of injecting photogenerated holes into the charge carrier transport material; and a layer of electrically insulating material;

charging the photoreceptor with negative electrostatic charges;

charging the photoreceptor with positive electrostatic charges in order to substantially neutralize the negative charge residing on the surface of the photoreceptor and exposing the photoreceptor to an imagewise pattern of electromagnetic radiation to which the charge carrier generating material is responsive whereby there is formed an electrostatic latent image within the photoreceptor.

4,275,133
ELECTROPHOTOGRAPHIC IMAGING PROCESSES UTILIZING ADHESIVE GENERATOR OVERCOATED PHOTORECEPTORS

Joseph Y. C. Chu, Fairport; Richard L. Schank, Webster, and Simpei Tutihasi, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

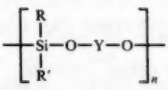
Continuation of Ser. No. 969,041, Dec. 13, 1978, Pat. No. 4,181,772. This application Sep. 24, 1979, Ser. No. 77,973

Int. Cl.³ G03G *5/04, 5/05*

U.S. Cl. 430—31 **16 Claims**

1. An electrophotographic imaging process which comprises

(a) providing an overcoated photoreceptor, said photoreceptor comprising an adhesive generating layer comprising a generating pigment dispersed in a copolymer of a siloxane and a dihydroxy compound having the formula:



wherein R and R′ are independently selected from the group consisting of alkyl, substituted alkyl, alkenes, substituted alkenes, aryl and substituted aryl; Y is a dihydroxy radical; and n is a number of sufficient value that the average molecular weight of the resulting silicone copolymer is between about 2,000 and about 250,000;

(b) charging the photoreceptor with negative electrostatic charges;

(c) and charging the photoreceptor a second time with electrostatic charges of positive polarity in order to substantially neutralize the negative charge residing on the surface of the photoreceptor; and

(d) exposing the photoreceptor to an imagewise pattern of electromagnetic radiation thereby forming an electrostatic latent image.

16. The process of claim 1 wherein said overcoated photoreceptor comprises an electrically conductive substrate overcoated with a layer capable of injecting holes into a layer on its surface, said layer being comprised of carbon black or graphite dispersed in a polymer, a hole transport layer in operative contact with the layer of hole injecting material, overcoated with a layer of charge generating material containing a generating pigment dispersed in a copolymer of a siloxane and a dihydroxy compound, said layer being in operative contact with the charge transport layer, and a top layer of an insulating organic resin overlying the layer of charge generating material, whereby the charge generating material provided permanent adhesion of the generating layer to the insulating overcoating layer.

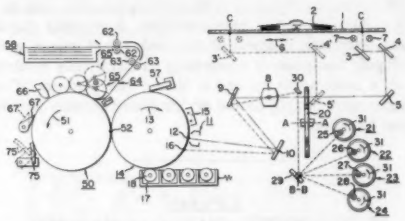
4,275,134
ELECTROPHOTOGRAPHIC METHOD FOR REPRODUCING A MULTICOLOR IMAGE

Wilhelm Knechtel, Biebertal, Fed. Rep. of Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 493,655, Jul. 30, 1974, abandoned. This application Dec. 15, 1976, Ser. No. 750,734

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—44 **4 Claims**



1. An electrophotographic method for reproducing a multicolor half-tone image using a photosensitive medium having an insulating surface layer, said method comprising the steps of:

applying a primary charge by uniformly charging the surface of said photosensitive medium; then

applying a second charge to the primary-charged surface of the photosensitive medium, wherein said second charge is applied by an AC corona discharge or by a DC corona discharger having an opposite polarity to that of said primary charge, and simultaneously therewith or therebefore or thereafter, exposing said surface to a color-resolved image of an original; then

projecting a screen image upon said surface of said photosensitive medium thereby forming a resultant electrostatic image on said surface; then

transferring the electrostatic image formed on said photosensitive medium onto an image supporting member either after said image is developed on said photosensitive medium, or directly after which said image is developed on said supporting member; and then

repeating said steps in accordance with a predetermined number of colors to be represented to form a superposed multicolor image on the supporting medium, wherein each screen image projection step is performed by projecting a different screen image pattern to prevent moire in the superposed multicolor image.

4,275,135
ELECTROPHOTOGRAPHIC $CdS.nCdCO_3$ CONTAINING MANGANESE STEARATE

Tetsuo Tomonaga, Nishinomiya, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 913,978, Jun. 7, 1978, abandoned. This application Jul. 11, 1979, Ser. No. 56,576

Claims priority, application Japan, Mar. 8, 1978, 53-26797; Oct. 14, 1978, 53-126430

Int. Cl.³ G03G *5/087, 5/09*

U.S. Cl. 430—95 **9 Claims**

1. An electrophotographic sensitive member for use in an image transfer type copying apparatus which comprises a photoconductive insulating layer of a photoconductive powder of cadmium sulfide and cadmium carbonate with manganese stearate in an amount of about 2 to 4 parts by weight per 100 parts by weight of said photoconductive powder of $CdS.nCdCO_3$ and copper as an acceptor impurity included, said layer being formed by heat curing a dispersion of the powder, manganese stearate and a binding resin in a solvent.

4,275,136
LIQUID DEVELOPER FOR COLOR ELECTROPHOTOGRAPHY

Sadao Murasawa, Itami, and Masatsuyo Maruo, Moriyama, both of Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Apr. 23, 1980, Ser. No. 143,124
Claims priority, application Japan, Apr. 27, 1979, 54-52376
Int. Cl.³ G03G *9/18*
U.S. Cl. 430—117 **10 Claims**

1. A color electrophotographic process for color imaging on ZnO, TiO_2 or organic photoreceptors comprising forming multi-electrostatic images and developing said images with a developing composition comprising an electrically insulating liquid, a coloring agent and a binder, the particles of said coloring agent having coated or distributed thereon aluminim or zinc hydroxide.

4,275,137
LIGHT-SENSITIVE DIAZOTYPE MATERIAL

Adrianus J. N. A. Verhoof, Maasbree, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Sep. 3, 1975, Ser. No. 609,965
Claims priority, application Netherlands, Sep. 13, 1974, 7412151
Int. Cl.³ G03C *1/60, 1/87, 5/34*
U.S. Cl. 430—149 **21 Claims**

1. Diazotype material comprising a paper support and on at least one side thereof, in order, a substantially hydrophobic water sealing layer and on said sealing layer a substantially water-insoluble light-sensitive layer of not more than 8 g/m^2 dry weight consisting essentially of a light-sensitive diazonium compound, an amino-formaldehyde condensate produced by cross-linking of an amino-formaldehyde pre-condensate in the presence of an initially water-soluble, hydrophilic polymer that contains groups reactive to said precondensate, and finely divided filler, said filler consisting predominantly by weight of starch particles in a weight ratio to said hydrophilic polymer of at least 5 to 1, said condensate being present in a quantity rendering said light-sensitive layer firmly adherent to said sealing layer, and said material being substantially non-curling, in either dry or moist condition, said light-sensitive layer after imagewise exposure being developable into a strong image by and capable of absorbing completely 1.5 to 4.5 cm^3/m^2 of an aqueous developing liquid.

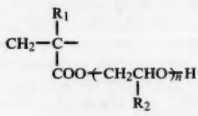
17. A process for the production of diazotype copies, wherein a diazotype material as claimed in claim 1 is imagewise exposed and subsequently is developed by spreading 1.5–4.5 cm^3/m^2 of developing liquid over the light-sensitive side of the diazotype material.

4,275,138
PHOTOSENSITIVE DIAZONIUM COMPOUND CONTAINING COMPOSITION AND ARTICLE WITH β-HYDROXYALKYL ACRYLATE OR METHACRYLATE

Nobuyuki Kita, and Yasuhisa Narutomi, both of Udawara, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan and National Patent Development Corp., New York, N.Y.

Continuation of Ser. No. 489,434, Jul. 17, 1974, abandoned. This application Sep. 14, 1976, Ser. No. 723,061
Claims priority, application Japan, Jul. 23, 1973, 48-82850
Int. Cl.³ G03C *1/60, 1/76, 1/94*
U.S. Cl. 430—157 **14 Claims**

1. A photosensitive composition of the negative type consisting essentially of a mixture of a negative acting diazonium compound and a polymer containing 50 to 100% by weight of the recurring unit represented by the following general formula (I) based on the total weight of the polymer:



(I)

wherein R_1 represents hydrogen atom or methyl group, R_2 represents hydrogen atom or methyl, ethyl or chloromethyl group and n is an integer of 1 to 10 with the balance of the units, if any, consisting essentially of units of a monoethylenically unsaturated compound having a single addition polymerizable unsaturated bond and free of groups reactive with a hydroxyalkyl group, said polymer having a molecular weight within the range of from about 10,000 to 100,000, said monoethylenically unsaturated compound being an organic acrylate or methacrylate, acrylamide, methacrylamide, mono or di-N-alkyl, cycloalkyl or aryl acrylamide or methacrylamide, hydroxyalkyl acrylamide or methacrylamide, monoallyl ester or ether monovinyl ethers, vinyl ester, styrene, alkylstyrene, halostyrene, halomethyl styrene, alkoxyalkyl styrene, alkyl crotonate, dialkyl itaconate, dialkyl maleate, dialkyl fumarate, acrylonitrile or methacrylonitrile, said diazonium compound being present in an amount of about 10 to 30% by weight based on the total weight of the polymer and diazonium compound.

10. A presensitized printing plate having a photosensitive layer consisting essentially of the composition of claim 1 on a support.

4,275,139
LIGHT-SENSITIVE MIXTURE AND COPYING MATERIAL PRODUCED THEREFROM

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 1, 1979, Ser. No. 90,144
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2847878
Int. Cl.³ G03C *1/60, 1/54*
U.S. Cl. 430—192 **6 Claims**

1. A light-sensitive mixture comprising
(a) an ester or amide of a 1,2-naphthoquinone-diazide-sulfonic or -carboxylic acid as the light-sensitive compound,
(b) a phenolic resin which is soluble in aqueous-alkaline solutions and insoluble in water, and
(c) about 4 to 20 percent by weight, based on the total solids content of the mixture, of a polycondensation product of formaldehyde and a hydroxybenzophenone having at least one free o- or p-position in a phenolic nucleus and wherein at least one OH group is in a position adjacent to the carbon atom which carries the carbonyl group, the benzophenone units of said polycondensation product being linked to one another via methylene bridges.

4,275,140
PROCESS FOR PREPARATION OF HIGH OPACITY PHOTOSENSITIVE IMAGES

Melvin A. Neiss, Annandale, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 93,917, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 968,963, Dec. 12, 1978, abandoned. This application Aug. 25, 1980, Ser. No. 180,568
Int. Cl.³ G03C *11/12*
U.S. Cl. 430—254 **9 Claims**

1. A process for preparing high opacity, colored images on the surface of a photosensitive element which comprises the steps of:
(a) bringing into surface-to-surface contact two elements (1) and (2), element (1) being a photosensitive element having imagewise tacky and nontacky image areas, and element (2) being an adhesively supported pigmented layer, the

pigmented layer comprising about 75 to 95 parts by weight of pigment and about 25 to 5 parts by weight of an elastomeric binder, the binder, when cast as an unsupported film, having a maximum tensile stress of less than 200 psi and showing an elongation to break of at least 50%, and

(b) separating the pigmented layer of element (2) from the photosensitive element (1) whereby the pigmented layer fails both cohesively and adhesively thereby remaining adhered substantially in its entire thickness solely to the tacky image areas of element (1).

4,275,141

POLYCRYSTALLINE TIN OXIDE-SILVER CHLORIDE-CADMIUM CHLORIDE UV PHOTOSENSITIVE FILM AND METHOD OF USE

Nicholas F. Borrelli, Elmira, and Peter L. Young, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 22, 1979, Ser. No. 86,690
Int. Cl.³ G03C *1/03, 1/06*
U.S. Cl. 430—270 **5 Claims**

1. A method for optically recording information in permanent form which comprises the step of exposing selected portions of a polycrystalline material having a composition which consists essentially of tin oxide, silver chloride, cadmium chloride and, optionally, copper chloride to ultraviolet light of a wavelength below 400 nm for a time sufficient to selectively darken said portions to a level providing an optical contrast ratio of at least about 3 between said portions and the unexposed portions of the material.

4,275,142

PHOTOSENSITIVE COMPOSITIONS AND PRINTING PLATES CONTAINING SAME

Yoshihiro Hosaka, Yokohama; Yoshiyuki Harita, Kawasaki; Mitsuo Kurokawa, Yokohama; Kunihiro Harada, Machida, and Eijiro Tagami, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 794,101, May 5, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,878
Claims priority, application Japan, May 6, 1976, 51/50959; May 6, 1976, 51/50960; Jul. 19, 1976, 51/85186; Feb. 5, 1977, 52/11241
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—271 **44 Claims**

1. A photosensitive composition, consisting essentially of:

(I) a copolymer having a molecular weight of 5,000 to 100,000 and prepared by a process consisting essentially of solution radical copolymerizing (A) 10 to 95 mol % of a conjugated diolefinic hydrocarbon, (B) 5 to 90 mol % of an α,β-ethylenically unsaturated carboxylic acid or anhydride and (C) 0 to 85 mol % of a monoolefinically unsaturated compound and

(II) a photosensitizer or a photosensitive crosslinking agent or mixture thereof which is photosensitively effective with said copolymer.

4,275,143

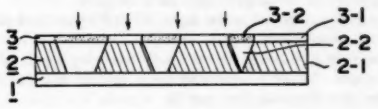
PHOTOPOLYMER INTAGLIO PRINTING PLATE

Kiyomi Sakurai, Osaka, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 1,579, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 861,008, Dec. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 721,550, Sep. 8, 1976, abandoned. This application Aug. 6, 1980, Ser. No. 175,859
Claims priority, application Japan, Sep. 8, 1975, 50-109234
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—307 **5 Claims**

1. A process for preparing a photopolymer intaglio printing plate for gravure printing, comprising a metal or plastic support member and a photopolymer layer provided thereon, said layer having concave portions of a constant depth as ink cells and the lowermost part of each of the concave portions reaching to the surface of the support member so that the surface of the support member is exposed to air at least as a point at said lowermost part, which comprises

subjecting a photosensitive plate comprising the support member and a layer, 5 to 50 microns thick, of a photopolymerizable composition containing 100 weight parts of a polymeric material as a binder, 5 to 150 weight parts of an addition polymerizable, ethylenically unsaturated monomer having a boiling point of not lower than 100° C., said monomer being a metal salt of acrylic acid or methacrylic acid wherein the metal component is Ca, Mg, Zn or Al, and 0.1 to 10 weight parts, per 100 weight parts of said



monomer, of an addition polymerization initiator provided on said support member, to exposure through a halftone negative or positive film to such an extent that the photopolymerizable composition at the exposed parts is cured down to the bottom of the photopolymerizable composition layer, but that the photopolymerizable composition in contact with the support member below the center of the non-exposed part of smallest area among all non-exposed parts remains uncured, and

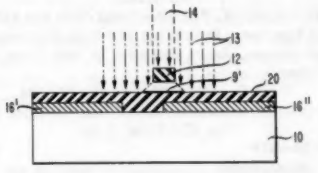
completely washing out the photopolymerizable composition at the non-exposed parts to obtain a plate wherein the bottom of each of said concave portions is in contact with said support member.

4,275,144

METHOD OF FABRICATING ELECTRODES WITH NARROW GAP THEREBETWEEN

Lawrence L. Buhl, New Monmouth, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 24, 1980, Ser. No. 114,833
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—312 **2 Claims**



1. A method of fabricating closely spaced electrodes by lithographic means comprising the steps of:

covering a surface of a substrate (**10**) upon which said electrodes are to be deposited with a first layer (**11**) of resist material;

exposing said material to radiant energy (**13**) through a mask (**12**) that is spaced away from the surface of said first resist layer (**11**) a distance that is of the same order of magnitude as the wavelength of said radiant energy and has a gap defining region (**14**) whose width is of the same order of magnitude as the wavelength of said radiant energy;

developing said exposed resist material to form a pattern of developed resist (**15**) upon said surface;

depositing a first metal layer on said pattern delineated surface;
removing said developed resist (**15**) leaving a pair of electrodes (**16'**, **16''**) separated by a first gap **25**;
covering said metallized substrate surface with a second layer (**20**) of resist material;
placing said mask (**12**) a distance above the surface of said second resist layer (**20**) that is of the same order of magnitude as the wavelength of said radiant energy and positioning said mask (**12**) such that said gap defining region (**14**) is aligned parallel to the gap between said electrodes and extends over at least a portion of one of said electrodes (**16''**);
exposing said second layer of material to said radiant energy through said mask;
developing said exposed resist material to form a second pattern of developed resist material (**19**);
depositing a second metal layer (**17'-17''**) over said pattern delineated surface; and
removing said developed resist (**19**) leaving a pair of electrodes (**20'-20''**) separated by a second gap **26** that is smaller than said first gap **25**.

4,275,145

METHOD FOR DISPERSING OIL-SOLUBLE PHOTOGRAPHIC ADDITIVES

Takeshi Mikami, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 11, 1979, Ser. No. 102,514
Claims priority, application Japan, Dec. 27, 1978, 53-161924
Int. Cl.³ G03C *1/40, 1/84*
U.S. Cl. 430—377 **15 Claims**

1. A method for dispersing an oil-soluble photographic additive into a hydrophilic colloid composition comprising dispersing a solution of an oil-soluble photographic additive in an organic solvent or the melted oil-soluble photographic additive in a hydrophilic colloid in the presence of an anionic surface active agent and lecithin together with a gelatin derivative.

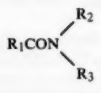
4,275,146

PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS

Masakazu Yoneyama; Shoichi Ino, and Junji Minamizono, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 10, 1979, Ser. No. 102,284
Claims priority, application Japan, Dec. 13, 1978, 53-155266
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—523 **13 Claims**

1. In a photographic photosensitive material, the improvement which comprises at least one surface layer of the photographic photosensitive material containing an organic carboxylic acid amide of the formula (I):



(I)

wherein R_1 represents a hydrocarbon group having 18 to 23 carbon atoms and at least one double bond and each of R_2 and R_3 represents a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms.

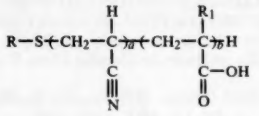
4,275,147

ANTISTATIC PHOTOGRAPHIC ELEMENT

E. Scudder Mackey, and Karl Pechmann, both of Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 831,534, Sep. 8, 1977. This application Jul. 11, 1980, Ser. No. 167,591
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—527 **6 Claims**

1. A light-sensitive silver halide emulsion containing photographic element comprising a support susceptible to the accumulation electric charges thereon which is provided on at least one surface thereof with an antistatically effective amount of a polyfunctional anionic oligomeric surfactant of the formula:



wherein R is an alkyl of 6 to 12 carbon atoms, R_1 is H or methyl and a+b is from 4 to 50 and a/a+b is from 0 to 0.6.

4,275,148

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Tamotsu Kojima; Mitsuto Fujiwhara; Takaya Endo, and Akio Iijima, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,283
Claims priority, application Japan, Dec. 9, 1977, 52-148525
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—558 **6 Claims**

1. A color photographic material comprising a light-sensitive silver halide emulsion layer coated on a support containing a magenta coupler represented by general formula (I) or (II): wherein R_1 represents a hydrogen atom, an alkyl, aryl or 5 or 6-membered heterocyclic group, R_2 represents a hydrogen atom, an alkyl, aryl, 5 or 6-membered heterocyclic, amino, sulfamoyl or carbamoyl group, R_3 represents an alkyl, aryl or 5 or 6-membered heterocyclic group having from 12 to 35 carbon atoms, R_4 represents a primary or secondary alkyl group having from 2 to 8 carbon atoms or a phenyl group, and R_5 represents a primary or secondary alkyl group having from 2 to 8 carbon atoms.

4,275,149

MACROMOLECULAR ENVIRONMENT CONTROL IN SPECIFIC RECEPTOR ASSAYS

David J. Litman, Palo Alto; Zvi Harel, Stanford, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Nov. 24, 1978, Ser. No. 964,099
Int. Cl.³ B12Q *1/66;* **C12N** *11/02, 11/10*
U.S. Cl. 435—7 **46 Claims**

1. An assay method for determining the presence in a sample of an analyte which is a member of a specific binding pair consisting of ligand and its homologous receptor;
said method employing:
(a) a continuous aqueous medium;
(b) discrete dispersable solid particles to which is conjugated one of the members of said pair to provide a particle conjugate, said particle conjugate defining an environment about said conjugated member of said pair different from said aqueous medium, wherein when a signal label is bound to said particle conjugate, the signal resulting from such signal label is different from the signal resulting from the signal label in said continuous aqueous medium;
(c) a signal producing system capable of producing a measurable signal, the level of said signal being affected by the

extent to which said signal producing system is within the environment of said particles;

(d) at least one member of said signal producing system being conjugated to a pair member to provide a signal label conjugate,

wherein the amount of signal label conjugate bound to said particle conjugate is related to the amount of analyte in said aqueous medium;

said method comprising:

combining in an aqueous assay medium,

(a) said sample;

(b) said particle conjugate substantially uniformly dispersed in said medium;

(c) said signal label conjugate;

(d) the homologous member of said specific binding pair, where the analyte, particle conjugate, and signal label conjugate are the same member of the specific binding pair; and

(e) any remaining members of said signal producing system;

with the proviso that when the analyte is a first receptor, said member of said pair conjugated to said particle can be the homologous ligand or receptor for said first receptor, and said member of said signal label conjugate can be receptor for said first receptor or the homologous ligand respectively; and

determining the level of said signal in said aqueous assay medium as compared to an assay medium having a known amount of analyte.

19. A kit for use in an immunoassay method according to claim **1** comprising in combination in relative amounts to substantially optimize the sensitivity of said immunoassay a particle conjugate having both a member of said specific binding pair conjugated to discrete porous solid particles and a first enzyme, and a second enzyme conjugated to a member of said specific binding pair to provide a signal label conjugate, wherein said enzymes are related by the product of one being the substrate of the other.

46. A composition comprising a discrete porous particle of a size in the range of about 500 nm to 100μ to which is conjugated a first enzyme and at least one molecule of a member of a specific binding pair consisting of ligand and antiligand; and a second enzyme which is a member of a signal producing system covalently bonded to a member of said specific binding pair, wherein said signal producing system member is bound to said particle through the intermediacy of the non-covalent binding of members of said specific binding pair and said first and second enzymes are characterized by the product of one of said enzymes being the substrate of the other of said enzymes.

4,275,150

RADIOENZYMATIC METHOD FOR ASSAYING NORMETANEPHRINE

Nicolas D. Vlachakis, 3515 Landfair Rd., Pasadena, Calif. 91107

Filed Jan. 30, 1979, Ser. No. 7,701

Int. Cl.³ G01N *33/48*; G01T *1/00*; G01N *33/54*

U.S. Cl. 435—7 **11 Claims**

1. A method for assaying normetanephrine in a sample selected from the group which consists of plasma, urine and tissue, the method comprising converting said normetanephrine in the sample to its N-methylated derivative with a tritiated methyl group and measuring the radioactivity of said derivative.

4,275,151

HYDROLYSIS OF PROTEIN-BOUND CHOLESTEROL ESTERS

Theodore W. Esders, Webster; Charles T. Goodhue, Rochester, and Christine A. Michrina, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 765,168, Feb. 3, 1977. This application Dec. 18, 1978, Ser. No. 970,498

Int. Cl.³ C12Q *1/60*

U.S. Cl. 435—11 **17 Claims**

1. In a process for assaying blood serum for total serum cholesterol content in which cholesterol esters are first hydrolyzed, and subsequently an assay for total cholesterol is performed, the improvement comprising hydrolyzing the cholesterol esters in an aqueous medium in the absence of protease with a compatible mixture of an enzyme preparation having cholesterol ester hydrolase activity and an alkyl phenoxy polyethoxy ethanol comprising a polyoxyethylene chain of less than about 20 oxyethylene units, said mixture containing an amount of said ethanol whereby said compatible mixture is effective to hydrolyze at least 70% of the cholesterol esters available in said aqueous medium.

9. An analytical element for the detection of cholesterol esters in an aqueous medium, said element free from protease and comprising, in at least one layer, a hydrolysis composition for protein-bound cholesterol esters comprising an enzyme preparation having cholesterol ester hydrolase activity and an alkyl phenoxy polyethoxy ethanol comprising a polyoxyethylene chain of less than about 20 oxyethylene units, said hydrolysis composition containing an amount of said ethanol whereby said hydrolysis composition is effective to hydrolyze at least 70% of the cholesterol esters available in said aqueous medium.

4,275,152

HYDROLYSIS OF PROTEIN-BOUND CHOLESTEROL ESTERS

Theodore W. Esders, Webster; Charles T. Goodhue, Rochester, and Christine A. Michrina, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 765,168, Feb. 3, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 62,433

Int. Cl.³ C12Q *1/60*

U.S. Cl. 435—11 **17 Claims**

1. A process for hydrolyzing protein-bound cholesterol esters comprising contacting protein-bound cholesterol esters in an aqueous medium in the absence of protease with a compatible mixture of an enzyme preparation having cholesterol ester hydrolase activity and an alkyl phenoxy polyethoxy ethanol comprising a polyoxyethylene chain of less than about 20 oxyethylene units, said mixture containing an amount of said ethanol whereby said compatible mixture is effective to hydrolyze at least 70% of the cholesterol esters available in said aqueous medium.

4,275,153

ANALYTICAL FLUOROGENIC SUBSTRATES FOR PROTEOLYTIC ENZYMES

Robert J. Gargiulo; Gary A. Mitchell; Patricia M. Hudson; Sharon P. Pochron; Rolf M. Huseby, all of Miami, Fla., and Robert E. Smith, Livermore, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

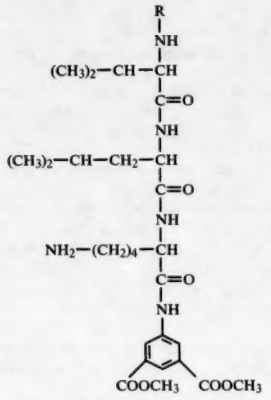
Filed Aug. 3, 1978, Ser. No. 930,826

Int. Cl.³ C12Q *1/36, 1/38, 1/56*; C07G *7/00*

U.S. Cl. 435—13 **6 Claims**

1. A method for determining plasmin or plasmin-like enzymes in a fluid comprising:

A. mixing said fluid with a fluorogenic substrate of the formula



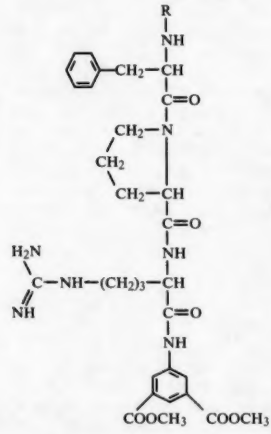
or acid salts thereof, wherein R is hydrogen-L, hydrogen-D, benzoyl, benzene sulfonyl, glutaryl, pyroglutamyl, carbobenzoxy, D-serine or carbobenzoxy-serine, thereby forming a substrate-containing fluid, whereby said substrate is enzymatically hydrolyzable by said plasmin, or plasmin-like enzymes to yield 5-aminoisophthalic acid dimethyl ester;

B. exposing said substrate-containing fluid to light of a wavelength suitable for causing fluorescent emission by said 5-aminoisophthalic acid dimethyl ester; and

C. while exposing said substrate-containing fluid to said light, measuring the fluorescent emission of said fluid.

4. A method for determining thrombin, trypsin or thrombin or trypsin-like enzymes in a fluid comprising:

A. mixing said fluid with a fluorogenic substrate of the formula



or acid salts thereof, wherein R is hydrogen-L, hydrogen-D benzoyl, benzene sulfonyl, glutaryl, pyroglutamyl, carbobenzoxy, D-serine or carbobenzoxy-serine, thereby forming a substrate-containing fluid, whereby said substrate is enzymatically hydrolyzable by said thrombin, trypsin, or thrombin or trypsin-like enzymes to yield 5-aminoisophthalic acid dimethyl ester;

B. exposing said substrate-containing fluid to light of a wavelength suitable for causing fluorescent emission by said 5-aminoisophthalic acid dimethyl ester; and

C. while exposing said substrate-containing fluid to said light, measuring the fluorescent emission of said fluid.

4,275,154

NUTRIENT MEDIUM

Michael J. Hall, Welwyn, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 11, 1980, Ser. No. 139,530

Claims priority, application United Kingdom, Apr. 27, 1979, 14742/79; Feb. 21, 1980, 5883/80

Int. Cl.[3] C12Q *1/18*

U.S. Cl. 435—32 **7 Claims**

1. A nutrient medium the ingredients of which are dissolved in water, comprising per liter of water from about:

2.0 to 5.5 g of anhydrous disodium hydrogen phosphate,
0.0005 to 0.005 g of ferrous sulphate heptahydrate,
0.001 to 0.01 g of folic acid,
0.0005 to 0.005 g of zinc sulphate heptahydrate,
0.0005 to 0.005 g of manganese sulphate tetrahydrate,
0.0005 to 0.005 g of cupric sulphate pentahydrate,
0.0001 to 0.0005 g of D-biotin,
0.004 to 0.04 g of uracil,
0.004 to 0.04 g of guanine,
0.004 to 0.04 g of cytosine,
0.004 to 0.04 g of adenine,
0.001 to 0.01 g of calcium D-pantothenate,
0.001 to 0.01 g of nicotinamide,
0.001 to 0.01 g of pyridoxal hydrochloride,
0.0001 to 0.005 g of thiamine hydrochloride,
0.001 to 0.01 g of i-inositol,
0.0005 to 0.005 g of cyanocobalamin,
0.001 to 0.05 g of choline dihydrogen citrate,
0.1 to 0.4 g of glycine,
0.1 to 0.5 g of L-valine,
0.1 to 0.5 g of L-lysine hydrochloride,
0.1 to 0.5 g of L-leucine,
0.1 to 0.5 g of L-isoleucine,
0.1 to 0.5 g of L-threonine,
0.02 to 0.05 g of L-tryptophan,
0.05 to 0.3 g of L-tyrosine,
0.15 to 0.25 g of L-arginine,
0.025 to 0.2 g of L-histidine,
0.1 to 0.5 g of L-cystine,
0.01 to 0.2 g of L-methionine,
0.1 to 0.5 g of L-proline,
0.1 to 0.4 g of L-phenylalanine,
0.05 to 0.5 g of L-asparagine,
0.01 to 0.1 g of L-serine,
0.01 to 0.1 g of L-alanine,
0.1 to 1.0 g of L-glutamic acid,
0.1 to 1.0 g of magnesium glycerophosphate monohydrate.
0.05 to 0.5 g of calcium gluconate,
0.4 to 2.0 g of anhydrous potassium dihydrogen phosphate,
1.0 to 4.0 g of anhydrous D-glucose, and
0.25 to 2.0 g of sodium citrate dihydrate.

4,275,155

MANUFACTURE OF AMINOGLYCOSIDE ANTIBIOTICS

Artur Pereira Da Luz, Avenida Gomes Pereira, 74,, 1500 Lisboa, Portugal

Filed Aug. 16, 1979, Ser. No. 67,528

Claims priority, application Spain, Nov. 24, 1978, 475.393

Int. Cl.[3] C12P *19/48*

U.S. Cl. 435—80 **6 Claims**

1. A process for the preparation of the gentamicins which comprises the cultivation of a new species, *Micromonospora scalabitana*, or mutants thereof, under aerobic conditions, in a medium containing adequate sources of assimilable carbon and nitrogen and trace elements.

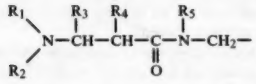
4,275,156

GLUCOSE ISOMERASE IMMOBILIZED PRODUCT AND PROCESS FOR PREPARING SAME

Toshio Yoshioka; Kazuo Teramoto, and Masaharu Shimamura, all of Ohtsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

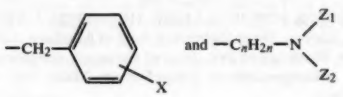
Filed Jan. 22, 1980, Ser. No. 114,270
Claims priority, application Japan, Jan. 23, 1979, 54/6727
Int. Cl.[3] C12P *19/24;* C12N *11/06*
U.S. Cl. 435—94 28 Claims

1. An enzymatically active product for use in isomerization of glucose into fructose, which comprises an organic polymeric material comprised of at least 50% by weight, based on the weight of the organic polymeric material, of a monovinyl aromatic compound in polymerized form, said polymerized monovinyl aromatic compound having a β-aminopropionamidomethyl group as a side chain represented by the formula I:

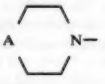


I

wherein R_1 is selected from hydrogen, an alkyl group having 1 to 6 carbon atoms and a hydroxyalkyl group having 2 to 6 carbon atoms, R_2 is selected from an alkyl group having 1 to 6 carbon atoms, a hydroxyalkyl group having 2 to 6 carbonatoms,



(where X, Z_1 and Z_2 are selected from hydrogen and an alkyl group having 1 to 6 carbon atoms, and n is an integer of from 2 to 6), or R_1 and R_2 form together with the nitrogen atom, to which R_1 and R_2 are bonded, a heterocyclic structure represented by the formula:



where A is —CH_2—, —O— or —NR_6— (wherein R_6 is H or an alkyl group having 1 to 6 carbon atoms), and R_3, R_4 and R_5 may be the same as or different from each other and are selected from hydrogen and a methyl group, and

said organic polymeric material having glucose isomerase immobilized with said side chain of the organic polymeric material.

4,275,157

METHOD FOR THE PRODUCTION OF L-LYSINE

Osamu Tosaka, Tokyo; Eiji Ono, Kawasaki; Masaru Ishihara, Yokohama; Hajimu Morioka, Kawasaki, and Koichi Takinami, Yokohama, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,414
Claims priority, application Japan, Jul. 10, 1978, 53-83807
Int. Cl.[3] C12P *13/08*
U.S. Cl. 435—115 4 Claims

1. A method for producing L-lysine by fermentation which comprises culturing a mutant of the genus Brevibacterium or Corynebacterium in a culture medium until L-lysine is accumulated in the culture medium and recovering the L-lysine so accumulated, said mutant being sensitive to fluoropyruvic acid capable of producing L-lysine and being selected from the class consisting of *Brevibacterium lactofermentum* NRRL B-11471, *Corynebacterium acetoglutamicum* NRRL B-11473, and *Brevibacterium flavum* NRRL B-11475.

4,275,158

MANUFACTURE OF FATTY ACIDS HAVING STRAIGHT AND LONG CARBON CHAINS USING A MICROORGANISM

Akira Taoka, and Seiichi Uchida, both of Urawa, Japan, assignors to Bio Research Center Company, Ltd., Saitama, Japan

Filed Jan. 7, 1980, Ser. No. 110,411
Int. Cl.[3] C12P *7/40*
U.S. Cl. 435—136 4 Claims

1. In the production of mono- and di-carboxylic acids of the same carbon skeletal length from straight chain C_{10}–C_{18} hydrocarbons by aerobically cultivating the hydrocarbons with a microorganism in a nutrient medium, at 25°–35° C. and pH 3–9 for 24 to 120 hours, the improvement which comprises using as the microorganism *Debaryomyces vanriji* (BR-308), ATCC 20588.

4,275,159

PROCESS FOR THE PRODUCTION OF XYLOSE BY ENZYMATIC HYDROLYSIS OF XYLAN

Jurgen Puls, Pinneberg; Michael Sinner, Dassendorf, and Hans-Hermann Dietrichs, Reinbek, all of Fed. Rep. of Germany, assignors to Projektierung Chemische Verfahrenstechnik GmbH, Ratingen, Fed. Rep. of Germany

Division of Ser. No. 836,713, Sep. 26, 1977, Pat. No. 4,200,692. This application Jul. 30, 1979, Ser. No. 61,860
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643800
Int. Cl.[3] C12N *11/18, 11/14, 9/14, 9/32*
U.S. Cl. 435—175 3 Claims

1. A process for the immobilization of purified xylanase, β-xylosidase, and uronic acid-splitting enzymes on to carriers comprising,

(a) dissolving an untreated enzyme in a buffer solution having a pH between about 4 and about 6,

(b) freeing said enzyme solution from insoluble constituents,

(c) filtering the solution obtained from step (b) through an ultrafilter having a cut-off between about MW 80,000 and about MW 120,000 and collecting both the supernatant and the filtrate,

(d) filtering the supernatant through an ultrafilter having a cut-off between about MW 250,000 and about MW 350,000 and recovering the filtrate containing substantially β-xylosidase and uronic acid-splitting enzymes, if present,

(e) filtering the filtrate obtained in step (c) through an ultrafilter having a cut-off between about MW 10,000 and about MW 50,000 and recovering the filtrate containing substantially xylanase,

(f) bonding the recovered filtrates from steps (d) and (e) to carriers.

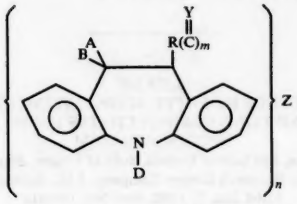
4,275,160

IMIPRAMINE DERIVATIVES AND POLY(AMINO ACID) CONJUGATES

Prithipal Singh, and Marcel R. Pirio, both of Sunnyvale, Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Jul. 6, 1979, Ser. No. 55,419
Int. Cl.[3] C07G *7/00;* C12N *9/96*
U.S. Cl. 435—188 15 Claims

1. Compound of the formula:



wherein:
D is 3-dimethylaminopropylene;
A and B are each H;
R is an aliphatic linking group of from 1 to 8 carbon atoms;
Y is O, S or NH;
Z is a poly(amino acid);
m is 0 or 1; and
n is in the range of one to the molecular weight of Z divided by 500.

4,275,161

PROCESS FOR THE MANUFACTURE OF L-α-GLYCEROPHOSPHATE OXIDASE

Hideo Misaki; Yoshifumi Horiuchi; Kazuo Matsuura, and Saburo Harada, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 20, 1979, Ser. No. 59,583
Claims priority, application Japan, Jul. 20, 1978, 53-88637
Int. Cl.³ C12N *9/04*
U.S. Cl. 435—190 **1 Claim**

1. A process for the manufacture of L-α-glycerophosphate oxidase, which comprises culturing L-α-glycerophosphate oxidase-producing microorganism selected from the group consisting of *Aerococcus viridans* IFO-12219 and *Aerococcus viridans* IFO-12317, in a nutrient culture medium, and separating the L-α-glycerophosphate oxidase thus produced from the cultured medium.

4,275,162

PROCESS FOR THE PRODUCTION OF SPHINGOMYELINASE

Teruhiko Beppu, No. 5-21, 1-chome, Horinouchi, Suginami-ku, Tokyo, and Noboru Ando, Fujisawa, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama and Teruhiko Beppu, Tokyo, both of, Japan

Filed Mar. 3, 1980, Ser. No. 126,202
Claims priority, application Japan, Mar. 9, 1979, 54-26794
Int. Cl.³ C12N *9/16*
U.S. Cl. 435—196 **9 Claims**

1. A process for producing sphingomyelinase which comprises cultivating a sphingomyelinase-producing microorganism belonging to the genus Pseudomonas in a culture medium to form sphingomyelinase in said culture medium, and recovering said sphingomyelinase from said culture medium.

4,275,163

CELLULASE-PRODUCING MICROORGANISM

Benedict J. Gallo, Natick, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 20, 1978, Ser. No. 962,522
Int. Cl.³ C12N *9/42, 15/00*; C12R *1/885*
U.S. Cl. 435—209 **7 Claims**

1. A biologically pure culture of *Trichoderma reesei* strain MCG77, said culture having the capability to synthesize cellulase enzymes, the synthesis of the cellulases being nonrepressed by glycerol, repressed by glucose but not subject to post repression lag, and inducible by lactose, the lactose induction being potentiated by xylose, whereby maximum cellulose synthesis is elicited by the presence of lactose and xylose in combination in the culture medium, the organism being genetically haploid under laboratory culture conditions.

4,275,164

PROCESS AND NUTRIENT MEDIUM FOR GROWING MICROORGANISM

Prakash S. Masurekar, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,216
Int. Cl.³ C12N *9/78, 1/20*
U.S. Cl. 435—227 **17 Claims**

9. An improved aqueous nutrient medium for growing under aerobic conditions a creatinine iminohydrolase-producing aerobic soil microorganism, said aqueous nutrient medium having a pH in the range of from about 5.0 to 10.0 and comprising:
(i) a carbon source comprising glucose or an amino acid precursor representing an organic acid free from amino groups, or a mixture thereof,
(ii) a nitrogen source comprising creatinine and an enzyme-stimulating amount of a vegetable protein hydrolysate or a non-peptic milk protein hydrolysate or a mixture of said vegetable protein hydrolysate and a non-peptic milk protein hydrolysate,
(iii) trace nutrients, and
(iv) a buffer.

4,275,165

PROCESS FOR ISOLATING HEPATITIS A-VIRUS

Peter R. Lorenz; Ernst Weinmann, both of Marburg, and Mirko Majer, Fürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 3, 1979, Ser. No. 54,609
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829741
Int. Cl.³ C12N *7/00*
U.S. Cl. 435—235 **7 Claims**

1. A method for obtaining hepatitis A-virus which comprises administering an immune suppressor to a monkey for a few days, then innoculating the monkey with hepatitis A-virus, continuing to administer an immune suppressor to the monkey, and recovering the virus in an aqueous extract of the faeces of the monkey.

4,275,166

PROCESS FOR THE RECOVERY OF INTRACELLULAR ENZYME

George T. McCollough, Penfield; Theodore W. Esders, Webster, and Shirley Y. Lynn, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,217
Int. Cl.³ C12N *9/78*
U.S. Cl. 435—227 **12 Claims**

1. A method for the recovery of creatinine iminohydrolase enzyme produced by cells of an aerobic microorganism, comprising the steps of:
(a) forming an aqueous suspension of said cells containing said enzyme;
(b) disrupting said cells in said suspension to release said enzyme into said suspension;
(c) before, during, or after step (b) and prior to removal of disrupted cells and other cellular components, introducing a water-miscible organic solvent into said suspension to form a mixture of said solvent and said suspension, the mixture being effective to retain said enzyme in the liquid phase thereof while undesired cellular components precipitate therefrom;
(d) separating said enzyme-containing liquid phase of step (c) from said precipitate and said disrupted cells; and

(e) introducing additional water-miscible organic solvent into said separated liquid phase of step (d) to precipitate the desired enzyme therefrom wherein said water-miscible solvent is selected from the group consisting of acetone, n-propanol and isopropanol.

4,275,167

PREFERENTIAL DEGRADATION OF LIGNIN IN GRAMINEOUS MATERIALS

Donald T. Wicklow, and Robert W. Detroy, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 18, 1980, Ser. No. 160,754
Int. Cl.³ D21C 1/00
U.S. Cl. 435—277 **5 Claims**

1. A method for treating a fresh gramineous plant material in order to enrich said material with respect to the available cellulose content comprising the following steps:

a. inoculating said plant material with the fungal microorganism *Cyathus stercoreus;*

b. fermenting said inoculated plant material under conditions favorable for growth of said microorganism, whereby the lignin in said material is preferentially degraded over the cellulose; and

c. recovering the free cellulose-enriched plant material from the fermentation of step (b).

4,275,168

POLYOLEFIN RESIN FOAM AND PROCESS FOR CONTINUOUSLY MANUFACTURING THE SAME

Seizaburo Watanabe, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 62,454
Int. Cl.³ C08J 9/14
U.S. Cl. 521—82 **10 Claims**

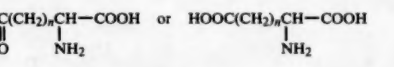
1. Aliphatic olefin polymer foam

(A) containing

(1) a nucleating agent having a melting point higher than that of the olefin polymer and having a particle size of 0.1 mm or less and

(2) from 0.05 to 10 percent by weight of at least one cell size-increasing agent, said amount of said agent being sufficient to measurably increase cell size of the resultant foam product relative to the cell size of the foam produced not containing said agent, said cell size-increasing agent being selected from the group consisting of

(a) amino acids having the formula:



wherein n is an integer of 1 to 8 or

(b) polyhydric alcohols having the formula: $HOCH_2.(COH)_nCH_2OH$ wherein n is an integer of 2 to 10;

(B) having a density of 100 kilograms per cubic meter or less and a structure rich in uniform closed cells having an average cell size of from 0.1 mm up to 10 mm; and

(C) wherein said olefin polymer has a melt index of 0.1 to 30 gm/10 min. as measured by ASTM-D-1238-58.

4,275,169

INTUMESCENT FLEXIBLE POLYURETHANE FOAM HAVING INCORPORATED INTO THE REACTION MIXTURE AN ALIPHATIC ALDEHYDE

Bernard Rudner, Ridgewood, N.J., and Herman Stone, Hazleton, Pa., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sep. 19, 1979, Ser. No. 76,876
Int. Cl.³ C08G 18/14
U.S. Cl. 521—99 **22 Claims**

1. In a process for the manufacture of flexible, resilient, polyurethane foam by the reaction of at least one polyester polyol, said polyol being the reaction product of at least one polyhydric alcohol with a polycarboxylic acid or anhydride or with a lactone, with at least one organic polyisocyante in the presence of at least one blowing agent and at least one catalyst, the improvement which comprises the step of incorporating into the mixture to be foamed at least one aliphatic aldehyde or aliphatic aldehyde generator, in amount sufficient to reduce the formation of burning embers and to produce a char when said foam is burned.

4,275,170

METHOD OF MAKING A FIRE RETARDANT POLYMER RESIN

Lawrence E. McAllister, Dayton, and Herbert Dietrich, Kennebunk, both of Me., assignors to Fiber Materials, Inc., Biddeford, Me.

Continuation-in-part of Ser. No. 58,567, Jul. 18, 1979, abandoned. This application Sep. 7, 1979, Ser. No. 73,218
Int. Cl.³ C08V 9/14
U.S. Cl. 521—103 **4 Claims**

1. Method of forming a flame retardant polymer resin, comprising the steps of

reacting moieties of a first aldehyde and first phenol in the presence of a mineral acid in sufficient proportions to provide an acid-condensation reaction product in the form of a relatively low molecular weight, low viscosity liquid linear polymer having excess aldehyde functionality, said first aldehyde being selected from the group consisting of furfural and mixtures of furfural and paraformaldehyde, said first phenol being selected from the group consisting of metacresol, orthocresol, 3,5 dimethyphenol, resorcinol and substituted resorcinols;

mixing moieties of a second aldehyde and second phenol to provide a solution of said second phenol in said second aldehyde, which solution contains said aldehyde in molar excess, said second aldehyde and second phenol being selected from the same groups as said first aldehyde and first phenol;

adding to said reaction product a solid, organic, water soluble acid as a polymerization active catalyst;

adding to said solution an inorganic acid polymerization catalyst containing water of hydration, said inorganic acid being selected from the group consisting of boric acid and boric acid complexes;

reacting said reaction product and solution in the presence of said catalysts to produce condensation polymerization thereof into said resin.

4,275,171

METHOD FOR PRODUCING FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS WITH BLENDS OF DIBROMONEOPENTYL GLYCOL AND FLAME RETARDANT PLASTICIZER

Gunter H. Wegner, Charlotte, N.C., assignor to Reeves Brothers, Inc., Charlotte, N.C.

Filed Apr. 12, 1979, Ser. No. 29,340
Int. Cl.³ C08G 18/14
U.S. Cl. 521—107 **11 Claims**

1. In a process for producing flexible polyether or polyester polyurethane foams having a porosity in the range from about 0.5 to about 10 cubic feet per minute, in which an isomeric mixture of 2,4- and 2,6- toluene diisocyanate is reacted with a polyol in the presence of a small amount of water and a catalytic amount of polymerization catalyst, the improvement which comprises:

incorporating as a separate reactant into the reaction mixture prior to polymerization from about 1 to about 20 percent by weight of a mixture of dibromoneopentyl glycol and flame retardant plasticizer based on the weight of the polyol used in the polymerization reaction, which manner of incorporating said mixture results in substantially more

flame retardant foams without adversely affecting the physical characteristics of said foams.

4,275,172

FROTHABLE POLYURETHANE COMPOSITION AND A CELLULAR FOAM PRODUCED THEREFROM SUITABLE FOR USE IN JOINTS BETWEEN WALLBOARDS

Bruce P. Barth, Bridgewater; Robert N. Johnson, Basking Ridge, and Walter P. Mayer, Lebanon, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,629
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—112 **38 Claims**

1. A frothable thermosetting polyurethane-forming composition in which the density of the cured foam therefrom is essentially the same as the density of the uncured froth composition when cured such that at least one surface of the froth is exposed to the atmosphere, which composition comprises:

(a) a polyol,

(b) a polyisocyanate,

(c) a thixotroping agent,

(d) an inert gas, and

(e) an amount of moisture available for reaction with the polyisocyanate that is less than that amount which would cause the composition to cure to a cellular polyurethane having a density which is not essentially the same density as that of the frothed composition.

4,275,173

STABILIZATION OF POLYETHER POLYOLS AND POLYURETHANE FOAMS PREPARED THEREFROM

Kenneth J. Hinze, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

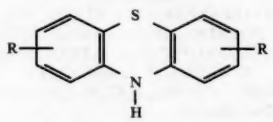
Filed Apr. 21, 1980, Ser. No. 141,854
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—117 **9 Claims**

1. In a polyurethane foam prepared from a polyether polyol or mixture of polyether polyols containing as a stabilizer against oxidative degradation from about 500 to about 100,000 ppm of an antioxidant composition containing:

(A) from about 15 to about 85 percent by weight of a sterically hindered phenolic antioxidant; and

(B) from 85 to about 15 percent by weight of 4,4'-bis(α,α-dimethylbenzyl)diphenyl amine;

the improvement which comprises replacing a portion of either of the components (A) or (B) or a portion of both of the components (A) and (B) with from about 25 to about 1000 parts per million parts by weight of polyether polyol of a phenothiazine compound represented by the formula



wherein each R is independently hydrogen or an alkyl group having from 1 to about 12 carbon atoms.

4,275,174

NEUTRON SHIELDING POLYMER COMPOSITION AND A PROCESS FOR PRODUCING THE SAME

Shin-ichi Tadokoro, and Hirozo Segawa, both of Nakajo, Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1979, Ser. No. 33,819
Int. Cl.³ C08F *12/08, 120/14;* C08K *5/05*
U.S. Cl. 525—1 **20 Claims**

1. An optically-transparent, neutron shielding polymer composition comprising a polymerization product of a base monomer ingredient containing as an essential mono-olefinic ingredient at least one monomer selected from the group consisting of (1) an alkyl methacrylate containing 1–4 carbon atoms in the alkyl group and (2) styrene polymerized in admixture with a boric acid ester of a polyol containing 3–16 carbon atoms and in which a molar ratio A of said polyol to boron atoms in said boric acid ester formed from said polyol being in the range of $0.6<A<4$, the boron content B (wt%) in the total monomer mixture being in the range of $1 \leqq B<6$.

4,275,175

MOLDING COMPOSITIONS AND PROCESS FOR PREPARING SAME

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 957,882, Nov. 6, 1978, Pat. No. 4,215,085.
This application May 21, 1979, Ser. No. 41,121
The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.
Int. Cl.³ C08K *5/10, 5/16*
U.S. Cl. 525—5 **9 Claims**

1. A molding composition comprising a blend of a nitrile polymer containing at least about 10 weight percent based on total polymer weight of polymerized acrylonitrile and about 0.005 to about 2% by weight based on the weight of the polymer of a compound selected from the group consisting of unsaturated fatty acid aldehydes, and esters formed by the reaction of a short chain olefinic alcohol with a fatty acid or cyanuric acid.

4,275,176

GRAFT POLYESTERS AND SIZED TEXTILES

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 937,690, Aug. 28, 1978, abandoned.
This application Feb. 15, 1980, Ser. No. 121,762
Int. Cl.³ C08L *67/00*
U.S. Cl. 525—48 **17 Claims**

1. A graft polyester having free carboxyl groups forming an integral part of the graft polyester chain, said polyester consisting of the reaction product of

I. an unsaturated polyester comprising the reaction product of:

(a) at least one polycarboxylic acid reactant comprising (1) a dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid esters, and their corresponding acyl halides or (2) a mixture of said dicarboxylic acid reactant with up to 20 mole percent of a polycarboxylic acid reactant having a functionality greater than two based upon 100 mole percent of said dicarboxylic acid reactant and

(b) at least one polyhydric alcohol reactant comprising (1) a diol or (2) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than two based upon 100 mole percent of said polyhydric alcohol,

wherein a minor effective proportion of said dicarboxylic acid reactant or polyhydric alcohol reactant is α,β-ethylenically unsaturated; with

II. at least one monovinyl monomer reactant comprising at least one monovinyl monomer having at least one carboxylic group or a mixture of said monovinyl monomer with any monofunctional vinyl monomer.

4,275,177
PROCESS FOR CONTINUOUS MASS POLYMERIZATION OF ALKENYL-AROMATIC COMPOUNDS

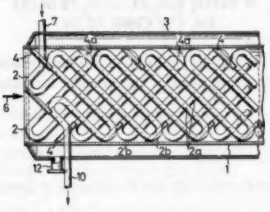
Wilfried Walkenhorst, Königstein; Richard Gauer, Wiesbaden; Gerhard Wild, Frankfurt am Main, and Walter Müller, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,654

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839563

Int. Cl.³ C08F *2/02, 12/08*

U.S. Cl. 525—53 **5 Claims**



1. Process for the manufacture of alkenyl-aromatic homo- or copolymers by continous mass polymerization, initiated thermally or by means of free radical initiators, of an alkenyl-aromatic compound or a mixture of alkenyl-aromatic compounds, or said aromatic compounds in the presence of a nitrile or an ester of acrylic or methacrylic acid and/or a natural or synthetic rubber, with a one-, two- or multi-stage continuous prepolymerization and subsequent one-, two- or multi-stage continuous main polymerization and final working up, which comprises subjecting in at least one stage during the main polymerization, the polymerizing mixture to a simultaneous treatment with heat exchange and static mixing, wherein the main polymerization is carried out in one or two or more series-connected horizontal or vertical tube reactors in which internal fitments are located, wherein the fitments consist of tubes which extend in the axial direction of the housing of the reactor extending from a wall of said reactor to an opposite wall of said reactor, said fitments possessing curved tube portions, and connecting tube portions extended in one plane said tubes being arranged substantially parallel to one another, in an array of planes with rectilinear tube portions of the adjacent tubes crossing one another at an angle of about 90 degrees and substantially next to each other, wherein the temperature of these fitments is controlled by a heat exchange medium flowing through said tubes.

4,275,178
POWDERY GRAFT-COPOLYMER COMPOSITION

Haruhiko Yusa; Masanori Oota, and Katsumi Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,278

Claims priority, application Japan, Dec. 29, 1978, 53/162274

Int. Cl.³ C08L *51/04, 55/02*

U.S. Cl. 525—71 **8 Claims**

1. A powdery graft-copolymer composition comprising a blend of

100 parts of a graft-copolymer (A) comprising 50 to 80% of an elastomeric trunk polymer, and 50 to 20% of a branch polymer of a hard-resin producing monomer grafted on the elastomeric trunk polymer; and

0.1 to 25 parts of a graft-copolymer (B) comprising 5 to 49% of an elastomeric trunk polymer, and 95 to 51% of a branch polymer of a hard-resin producing monomer grafted on the elastomeric trunk polymer,

both the graft-copolymers (A) and (B) having been obtained through emulsion graft-copolymerication, and wherein said graft-copolymer composition has been obtained by blending the graft-copolymers (A) and (B) in slurry form followed by drying all quantities expressed in parts and percentages being by weight.

4,275,179
POLY(p-METHYLSTYRENE) POLYBLEND

Anthony M. Sherman, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,975

Int. Cl.³ C08L *53/02*

U.S. Cl. 525—98 **3 Claims**

1. A blend of poly (p-methylstyrene) and a styrene-conjugated diolefin block copolymer containing between about 60 weight percent and about 80 weight percent styrene; the weight ratio of poly (p-methylstyrene): styrene-conjugated diolefin block copolymer being between about 70:30 and about 40:60.

4,275,180
POLYMER COMPOSITIONS

Raymond Clarke, Mountain View, Calif., assignor to Raychem Limited, London, England

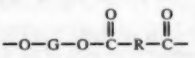
Filed Apr. 7, 1978, Ser. No. 894,511

Claims priority, application United Kingdom, Apr. 12, 1977, 15122/77

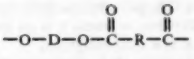
Int. Cl.² C08L *67/06*

U.S. Cl. 525—173 **11 Claims**

1. A polymer composition which comprises a crosslinked blend of an elastomer and a thermoplastic polymer, the elastomer comprising a polymer of ethylene with an ethylenically unsaturated aliphatic ester, the elastomer and the thermoplastic polymer being substantially free of halogen-containing substituents, the elastomer and the thermoplastic polymer being present in a weight ratio of from 2.5:1 to 1:2.5, wherein the thermoplastic polymer comprises a segmented copolyester polymer consisting essentially of recurring intralinear long chain ester units and short chain ester units randomly joined head-to-tail through ester linkages, said long chain ester units being represented by the formula:



and said short chain ester units being represented by the formula:



where G is divalent radical remaining after the removal of terminal hydroxyl groups from at least one long chain glycol having a molecular weight of from 600 to 6000; R is a divalent radical remaining after removal of carboxyl groups from at least one dicarboxylic acid having a molecular weight of less than 300; and D is a divalent radical remaining after removal of hydroxyl groups from at least one low molecular weight diol having a molecular weight of less than 250.

4,275,181
CURABLE BLENDS OF CHLOROPRENE POLYMER AND ETHYLENE COPOLYMER

George L. K. Hoh, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 937,726, Aug. 29, 1978, abandoned. This application Nov. 30, 1979, Ser. No. 98,973
Int. Cl.[3] C08L 11/00, 81/00
U.S. Cl. 525—189 11 Claims

1. An improved curable blend of chloroprene elastomer, with at least one compatible polymer wherein the improvement comprises said compatible polymer being about 5–100 parts of an ethylene copolymer per 100 parts of a chloroprene elastomer, said ethylene polymer being selected from the group consisting of ethylene/carbon monoxide/X and ethylene/sulfur dioxide/X copolymers, wherein comonomer X is (I) a vinyl ester of an alkanoic acid, the acid having 1 to 18 C atoms, (II) an alkyl acrylate or methacrylate, the alkyl group having 1 to 18 C atoms, (III) an alkyl vinyl ether, the alkyl group having 1 to 4 C atoms, (IV) acrylonitrile or methacrylonitrile, or combinations of the above comonomers, the ethylene copolymer containing about 3–25 weight % of carbon monoxide or sulfur dioxide, about 10–65 weight % of comonomer X, and about 30–75 weight % of ethylene, the vulcanizates of said curable blends of chloroprene having increased resistance to ozone without sacrificing resistance to oil.

4,275,182
PROCESS FOR THE PREPARATION OF IMPROVED STYRENE ACRYLIC ACID COPOLYMERS

Duane B. Priddy, Coleman, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 17, 1977, Ser. No. 852,411
Int. Cl.[3] C08F 212/08, 220/06
U.S. Cl. 526—109 3 Claims

1. In a process for the preparation of molding grade polymers having polymerized therein from about 1 to 30 parts by weight of acrylic acid and from about 70 to 99 parts by weight of styrene wherein a stream of a monomeric mixture containing styrene and acrylic acid is passed to a recirculating polymerizing zone and at least a portion of the stream polymerized within the recirculating polymerization zone to form styrene-acrylic acid copolymers the stream containing from 1 to 50 parts per million by weight of iron, the improvement which comprises maintaining the polymerization temperature between about 110° C. and 150° C., initiating polymerization with a free radical generating peroxide initiator.

4,275,183
HYDROPHILIC POLYMERS AND CONTACT LENSES THEREFROM

Peter Kuzma, 1708 Westminster Blvd., Parlin, N.J. 08859

Filed Jul. 27, 1979, Ser. No. 61,466
Int. Cl.[3] C08F 220/20, 220/54; G03B 21/46
U.S. Cl. 526—303 8 Claims

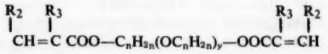
1. A hydrophilic water swellable, water insoluble copolymer of at least one monomer from each of the following four subclasses:

(1) at least 35% hydroxy (C_2–C_4alkyl)2-alkenoate,

(2) 30 to 60% of a 2-alkenamide or an N,N-di(C_1–C_6alkyl)2-alkenamide,

(3) 5 to 20% $R\text{-}(OR_1)_x\text{-}Z$ wherein R is C_1-C_6alkyl, wherein R_1 is C_2–C_4alkylene, wherein x is an integer from 1 to 4 and wherein Z is a 2-alkenoyloxy,

(4) 0.3 to 5% of a polyethylenically unsaturated cross-linking agent having the formula



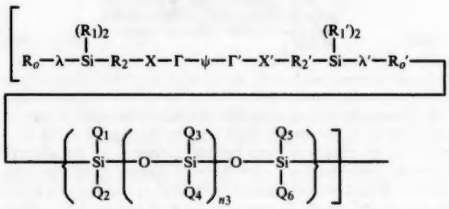
where R_2 and R_3 are hydrogen or lower alkyl, n is an integer of 2 to 4 and y is an integer of 2 to 9, said copolymer being capable of holding 50 to 80 weight percent of water based on the total of water plus dry polymer.

4,275,184
ETHYLENIC SILICON COMPOUNDS AND THERMOPLASTIC ELASTOMERS OBTAINED THEREFROM

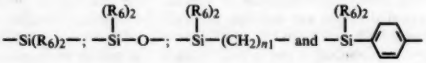
Michel Bargain, Lyons, and Marcel Lefort, Caluire, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Division of Ser. No. 965,529, Dec. 1, 1978, Pat. No. 4,213,914, which is a division of Ser. No. 851,898, Nov. 16, 1977, Pat. No. 4,147,711, which is a division of Ser. No. 617,513, Sep. 29, 1975, Pat. No. 4,088,670. This application Oct. 26, 1979, Ser. No. 88,584
Claims priority, application France, Oct. 1, 1974, 74 33041; Feb. 11, 1975, 75 04191; Feb. 11, 1975, 75 04192
Int. Cl.[3] C08G 77/04
U.S. Cl. 528—26 57 Claims

1. A thermoplastic polysiloxane elastomer which possesses a plurality of recurring units of the general formula:



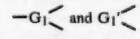
in which each of R_o and R'_o, which may be identical or different, represents a divalent organic radical containing from 2 to 10 carbon atoms, each of λ and λ′, which may be identical or different, represents a valency bond or one of the following organosilicon groups:



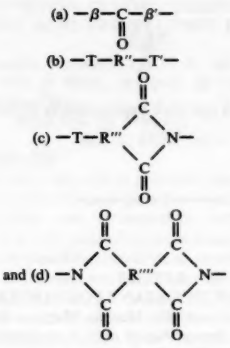
wherein each R_6 radical which may be identical or different, represents a methyl radical or a phenyl radical, and n_1 is 1, 2 or 3; each of Q_1 to Q_6, which may be identical or different, represents a linear or branched alkyl radical optionally substituted by one or more halogen atoms or cyano groups, or an aryl or alkylaryl radical, optionally substituted by one or more halogen atoms; n_3 is a number from 0 to 2,000 and each of R_1 and R_1', which may be identical or different, is a straight or branched alkyl radical optionally substituted by one or more halogen atoms or cyano groups, or an aryl or alklaryl radical, optionally substituted by one or more halogen atoms; each of R_2 and R_2', which may be identical or different, is a straight or branched alkylene or alkylidene radical having from 1 to 4 carbon atoms; each of X and X′, which may be identical or different, is a divalent radical consisting of, or containing, at least one hetero-atom selected from O, S and N, the radicals X and X′ being linked to the radicals R_2 and R_2' via the hetero-atom; each of Γ and Γ′, which may be identical or different, is an organic radical having 1 to 30 carbon atoms, selected from:

(a) a divalent radical identified by —G— and —G′— and

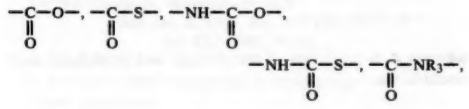
(b) a trivalent radical identified by

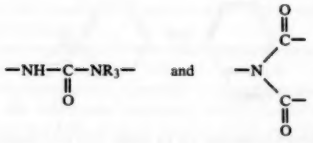


Ψ is an organic radical selected from:



in which
each of β and β' independently represents an oxygen or nitrogen atom;
R'' represents a valency bond or a divalent organic radical;
R''' represents a trivalent organic radical;
R'''' represents a tetravalent organic radical and
each of T and T', which may be identical or different, represents a functional group selected from:





wherein R_3 represents a hydrogen atom or an alkyl radical having from 1 to 6 carbon atoms.

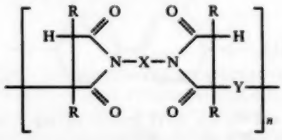
4,275,185

POLYIMIDES OF BISMALEIMIDES AND ACTIVATED METHYLENE COMPOUNDS

Robert T. Lu, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

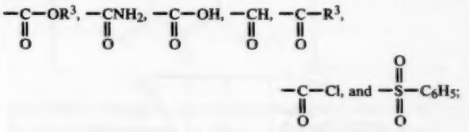
Filed Sep. 24, 1979, Ser. No. 78,448
Int. Cl.³ C08G 69/26, 73/12
U.S. Cl. 528—170 **4 Claims**

1. A polyimide polymer suitable for forming a film, a molding powder or a laminate characterized by the formula:

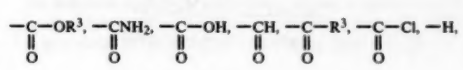


wherein X is a divalent organic radical;
wherein each R is independently selected from the group consisting of —H, —F, —Cl, —Br, $—CF_3$, and C_{1-4} alkyl;
wherein Y is

wherein R^1 is a monovalent radical selected from the group consisting of —CN, $—NO_2$,



wherein R^3 is C_{1-4} alkyl;
wherein R^2 is a monovalent radical selected from the group consisting of —CN, $—NO_2$,



$—CH_3$, $—C_6H_5$, —Cl, —F, and $—C_6H_4Z$;
wherein Z is selected from the group consisting of —H, $—CH_3$, a lower alkyl, —Cl, —Br, and —F; and
wherein n is an integer.

4,275,186

OLIGOMER EXTENDED POLYARYLETHERS

James H. Kawakami, Piscataway, and George T. Kwiatkowski, Green Brook, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 27, 1978, Ser. No. 928,459
Int. Cl.³ C08G 63/66, 63/68
U.S. Cl. 528—174 **14 Claims**

1. Method of preparing a high molecular weight, polyarylene polyether polysulfone having a reduced viscosity of at least 0.2 dl/g in chloroform at 25° C. which comprises coupling essentially stoichiometric quantity of an hydroxy terminated oligomeric polyarylene polyether polysulfone having a number average molecular weight of up to about 5000 in a post copolymerization reaction with essentially stoichiometric quantity of a comonomer selected from the group consisting of diaryl carbonates, diaryl esters of carboxylic acids or diorgano difunctional silyl coupling agents having the formula:

$$(D)_2Si(E)_2$$

wherein D is a monovalent hydrocarbon radical selected from the group consisting of alkyl having 1 to about 4 carbons, cycloalkyl having 5 to about 7 carbons and aryl having 6 to about 10 carbons and E is a monovalent radical selected from the class consisting of OH, alkoxy having 1 to about 6 carbons, aryloxy having 6 to about 10 carbons, acyloxy having 2 to about 4 carbons, amino and ureido groups at a temperature of about 180° to about 400° C.

4,275,187

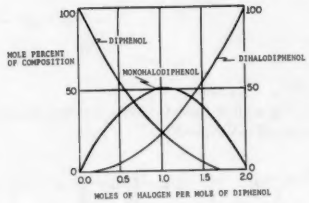
CONTINUOUS PROCESS FOR PRODUCING HALOGENATED POLYCARBONATES AND THE POLYCARBONATES OBTAINED THEREFROM

Clayton B. Quinn, Mt. Vernon, Ind., and Charles A. Wilson, II, Greenville, S.C., assignors to General Electric Company, Mt. Vernon, Ind.

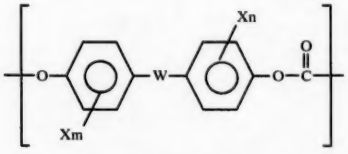
Division of Ser. No. 882,192, Feb. 28, 1978, Pat. No. 4,224,434. This application Dec. 10, 1979, Ser. No. 101,840

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—174 **7 Claims**



1. A highly pure, high molecular weight aromatic polycarbonate consisting essentially of predetermined, statistical mixtures of unreacted diphenol, monohalodiphenol and dihalodiphenol, said polycarbonate having an intrinsic viscosity of about 0.4–1.0 dl/g as measured in methylene chloride at 25° C., said polycarbonate being represented by the general formula:



wherein Xm and Xn can each be a halogen and mixtures thereof; m and n are each 0–2 with the proviso that m+n equal at least 0.1, but no more than about 2.0; and, W is a member selected from the following group:

(a) $—CH_2—_r$ wherein r is 0–10 with the proviso that when both Xm and Xn are chlorine and m and n are each 1, r is 0 or 2–10;

(b)

wherein R is a member of the group consisting of C_1–C_{10} alkyl and C_6–C_{14} aryl;

(c)

wherein R and R' can each independently be the same as R in (b) above.

(d)

wherein p and q can each independently be 0–1; and

(e) —O—.

4,275,188

STRESS-CRACK RESISTANT POLYARYLATES

Mitchell H. Berger, Somerville; Markus Matzner, Edison, and Hugh C. Gardner, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 15,939, Feb. 28, 1979, abandoned. This application Apr. 22, 1980, Ser. No. 142,708

Claims priority, application Canada, Feb. 15, 1980, 345804; European Pat. Off., Feb. 27, 1980, 80400275.6; Japan, Feb. 27, 1980, 55-022889

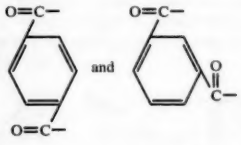
Int. Cl.³ C08G *63/18*

U.S. Cl. 528—193 **10 Claims**

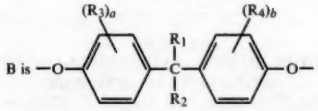
1. A normally solid polyarylate having the following repeating units:

—A—B— —A—D—

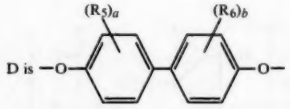
wherein A is a mixture of terephthalic and isophthalic acid residues, viz.,



in a mol ratio containing up to about 100 mol percent of the latter to a 50/50 mol ratio



wherein each of R_1 and R_2 are each H or alkyl groups having 1 to about 7 carbon atoms, R_3 and R_4 are alkyl groups having 1 to about 18 carbon atoms and a and b are integers having values of 0 to 4;



wherein R_5 and R_6 are alkyl groups having 1 to about 18 carbons and a and b are integers having values of 0 to 4, and wherein the mol ratio of B to D is in the range of from about 20 mols of B to 80 mols of D to about 80 mols of B to about 20 mols of D and the mol ratio of A to B and D is approximately stoichiometric.

4,275,189

NEOPENTYL GLYCOL, TEREPHTHALATE, DICARBOXY ACID, TRIMELLITATE THERMOSETTING RESIN

Charles Danick, Plymouth, and K. A. Pai Panandiker, Maple Grove, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Feb. 28, 1980, Ser. No. 125,533
Int. Cl.³ C08G 63/12
U.S. Cl. 528—296 5 Claims

1. A polyester resin for a powder coating resin comprising an oligomer of neopentyl glycol or cyclohexane dimethanol and terephthalic acid, or isophthalic acid or dimethyl terephthalate in a mole ratio of between about 1.15 and about 1.50 reacted with trimellitic anhydride to provide a trimellitate, the mole ratio of the oligomer to the trimellitic anhydride being in the range from about 2.5 to about 5.5, the trimellitate being reacted with a dicarboxylic anhydride or acid in the mole ratio of between about 1.5 and 2.5; the polyester resin having an ICI viscosity at 200° C. between about 20 poises and about 60 poises, an acid value of less than 30, a hydroxyl value between about 20 and about 60, and an equivalent weight between about 935 and about 2800.

4,275,190

LATENT HEAT-CURABLE IODONIUM/COPPER SALT-CATALYZED EPOXY RESIN COMPOSITIONS

Charles D. Dudgeon, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1980, Ser. No. 110,372
Int. Cl.³ C08G 59/68
U.S. Cl. 528—361 11 Claims

1. A polymerizable composition comprising:

(i) an epoxy resin;

(ii) an effective amount of a catalyst precursor comprising an aromatic iodonium salt of a complex halogenide;

(iii) a small but effective amount of a copper salt catalyst activator; and

(iv) from a small but effective stabilizing amount up to about 150 parts by weight per 100 parts by weight of (i) of (a) a carboxyl terminated copolymer of butadiene and acrylonitrile, (b) a hydroxy terminated copolymer of butadiene and acrylonitrile, or (c) a mixture of (a) and (b).

4,275,191

POLYMERIZATION OF AROMATIC NITROGEN HETEROCYCLIC COMPOUNDS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 23, 1979, Ser. No. 32,037
Int. Cl.³ C08G 73/06; C07D 213/04, 215/04, 221/06
U.S. Cl. 528—423 12 Claims

1. A process of polymerizing aromatic nitrogen heterocyclic compounds selected from the group consisting of quinoline, acridine, benzoquinoline, 2-methyl quinoline, pyridine, 2-methyl pyridine, 4-methyl pyridine and 2-butyl pyridine which comprises heating said compounds with alkyl halides at temperatures of from about 250° C. to about 400° C. in a pressure reaction vessel for about 8 to 30 hours.

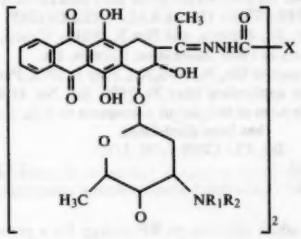
4,275,192

BIS(4-DEMETHOXYDAUNORUBICIN)DIHYDRAZONE DERIVATIVES AND PHARMACOLOGICALLY ACCEPTABLE SALTS THEREOF

Martin A. Apple, Daly City, Calif., and Raphael Pappo, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed May 3, 1979, Ser. No. 35,657
Int. Cl.³ C07H 15/24; A61K 31/71
U.S. Cl. 536—17 A 8 Claims

1. A compound of the formula



and pharmacologically acceptable salts thereof wherein R_1 and R_2 represent hydrogen or alkyl having from 1 to 4 carbon atoms and X represents

(a) Alkylene having from 3 to 20 carbon atoms and optionally substituted by one or more hydroxy or primary amino groups or both, or

(b) Alkylene optionally interrupted by one or more secondary amino groups, the total number of carbon and nitrogen atoms in the resultant chain being from 3 to 20.

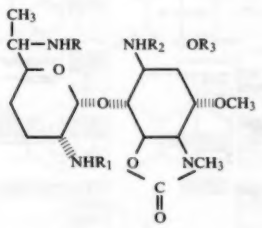
4,275,193

4,5-CARBAMATES OF FORTIMICIN B

John S. Tananier, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,134
Int. Cl.³ C07D 413/12
U.S. Cl. 536—17 R 7 Claims

1. A fortimicin B-4,5-carbamate represented by the formula:



wherein R is hydrogen or monocyclearyloxy carbonyl; R_1 is hydrogen or an amine-protecting group; R_2 is hydrogen or loweralkyloxycarbonyl; and R_3 is hydrogen and when R,R_1 or R_2 are hydrogen, the salts thereof.

4,275,194

CHITOSAN-IODINE ADDUCT

Masatada Kato, Tokyo; Nobuaki Mineshima, Mutsuzawamura; Tatsuo Kato, Mobara; Yoshiharu Kawada, Chiba; Hironori Hanada, and Teiichi Inomata, both of Mobara, all of Japan, assignors to Nihon Tennen Gas Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,047
Claims priority, application Japan, Nov. 26, 1977, 52-141920; Dec. 28, 1977, 52-157544
Int. Cl.³ C08B 37/08
U.S. Cl. 536—20 2 Claims

1. A chitosan-iodine adduct wherein iodine is included in the molecule of chitosan.

4,275,195

PROCESS AND APPARATUS FOR EXPEDITING THE MERCERIZATION OF ALKALI CELLULOSE

Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Berwyn, Pa.

Continuation-in-part of Ser. No. 576,200, May 9, 1975, Pat. No. 4,163,840. This application May 24, 1979, Ser. No. 41,895

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.³ C08B *1/08, 1/10*

U.S. Cl. 536—101 **7 Claims**

1. A process for mercerizing alkali cellulose comprising the step of:

exposing said alkali cellulose to RF energy for a period of time and at an energy input level sufficient to depolymerize said alkali cellulose to a desired predetermined degree of polymerization.

4,275,196

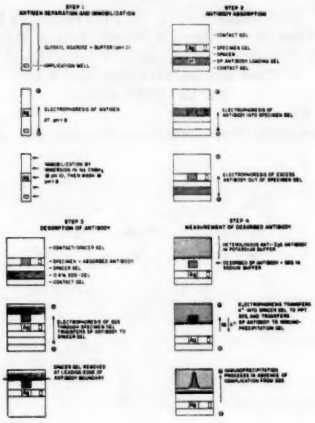
GLYOXAL AGAROSE

John R. Shainoff, Cleveland Heights, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed Mar. 23, 1979, Ser. No. 23,179

Int. Cl.³ B01D *57/02;* **B01J** *13/00;* **C07H** *15/00*

U.S. Cl. 536—115 **3 Claims**



1. Glyoxal agarose.

4,275,197

9,11-DIDEOXY-10-OXA-TXB INTERMEDIATES

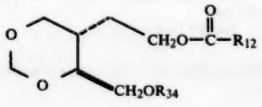
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 19,752, Mar. 12, 1979. This application Jan. 28, 1980, Ser. No. 116,324

Int. Cl.³ C07D *319/06, 5/12*

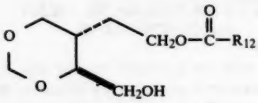
U.S. Cl. 542—413 **1 Claim**

1. A thromboxane intermediate of formula IV, V, VI, or VII

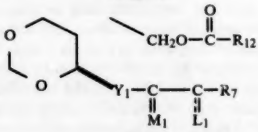


IV

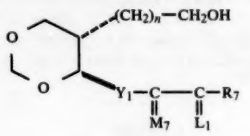
-continued



V



VI



VII

wherein Y_1 is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) $—CH_2CH_2—$, or

(4) —C≡C—,

wherein M_1 is α—R_5:β—OH, α—OH:β—R_5, or α—H:-β—H, wherein R_5 is hydrogen or methyl;

wherein L_1 is α—R_3:β—R_4, α—R_4:β—R_3, or a mixture of α—R_3:β—R_4 and β—R_3:α—R_4, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein g is one, 2, or 3;

wherein R_7 is

(1) $—(CH_2)_m—CH_3$, wherein m is an integer from one to 5 inclusive;

(2) phenoxy;

(3) phenoxy substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, icnlusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(4) phenyl;

(5) phenyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;

(6) phenylmethyl, phenylethyl, or phenylpropyl; or

(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein M_7 is α—R_5:β—OR_{10}, α—OR_{10}:β—R_5, or α—H:-β—H, wherein R_{10} is a stable, acid hydrolyzable blocking group;

wherein R_{12} is alkyl of one to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive; phenyl; or phenyl substituted with one, 2 or 3 chloro or alkyl of one to 3 carbon atoms, and

wherein R_{34} is a stable, hydrogenolyzable blocking group.

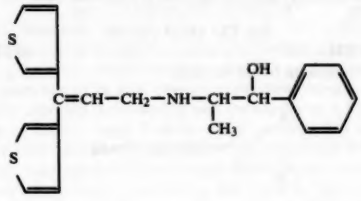
4,275,198

METHOD FOR PREPARING BASIC DITHIENYL COMPOUNDS

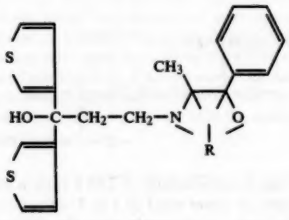
Frank J. Stiefel, Princeton, N.J., assignor to Carter-Wallace Inc., New York, N.Y.

Filed Jul. 18, 1980, Ser. No. 170,028
Int. Cl.[3] C07D *409/14, 409/06*
U.S. Cl. 542—414 5 Claims

1. A method for preparing a compound of the formula and its salts



which comprises hydrolyzing a compound of the formula



wherein R is hydrogen in lower alkyl.

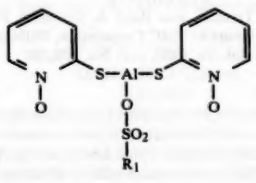
4,275,199

PROCESS FOR PREPARING MIXED SULFONATES OF BIS-(N-OXYPYRIDYL-2-THIO)ALUMINUM

Claude Bouillon, Eaubonne, and Georges Rosenbaum, Asnieres, both of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 925,882, Jul. 18, 1978, abandoned. This application Jan. 8, 1980, Ser. No. 110,499
Claims priority, application France, Jul. 21, 1977, 77 22391
Int. Cl.[3] C07D *213/89*
U.S. Cl. 542—430 6 Claims

1. Process for preparing compounds of the formula:



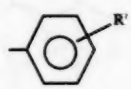
I

in which

R_1 is selected from the group consisting of

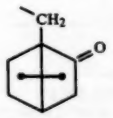
(i) alkyl of 1 to 4 carbon atoms,

(ii)

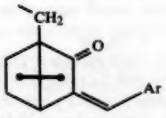


in which R' is methyl, chloro or hydroxy,

(iii)

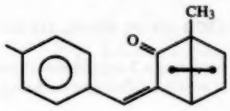


(iv)

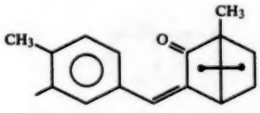


in which Ar is C_6H_5— or p—$CH_3C_6H_4$—,

(v)

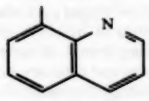


(vi)

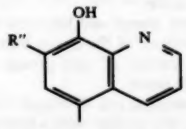


(vii)

(viii)



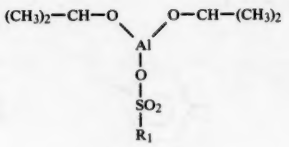
(ix)



in which R'' is hydrogen or iodo;

(x) —CH_2—CH_2—NH_2, and

(xi) —CH_2—CH(COOH)—NH_2 wherein said process is undertaken in two stages; wherein in a first stage an intermediate compound of the formula



is prepared by reacting an equimolar quantity of aluminum isopropylate with a sulfonic acid of the formula R_1SO_3H wherein R_1 is as defined above and wherein in a second stage, said intermediate compound is reacted with two equivalents of the N-oxide of pyridine-2 thiol.

4,275,200

PROCESS FOR THE PRODUCTION OF OXAZOLINONE-2-COMPOUNDS

Fritz Benker, Pullach; Hans-Heinrich Credner, Hohenschaeftlarn; Wolfgang Lässig, Munich; Ernst Meier, Munich, and Siegfried Schleger, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

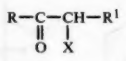
Continuation of Ser. No. 725,323, Sep. 22, 1976, abandoned. This application May 30, 1978, Ser. No. 910,624

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 2543094

Int. Cl.³ C07D *263/20, 295/00, 213/02*

U.S. Cl. 544—137 **11 Claims**

1. The process of preparing a 3-oxazolinone-2-compound or its tautomeric form in which a α-halogen carbonyl compound of the formula



in which

X represents chlorine or bromine

R and R^1 are each selected from the group consisting of hydrogen, alkoxy carbonyl groups, N-arylcarbamoyl, N-alkyl-N-arylcarbamoyl, N,N-dialkylcarbamoyl, morpholinocarbonyl

straight or branched chain alkyl groups having from 1–20 carbon atoms, 5- or 6-membered cycloalkyl groups which may in turn be substituted by alkyl groups, the alkyl-cycloalkyl entity having from 5–20 carbon atoms,

naphthyl or phenyl groups and heterocyclic groups selected from the group consisting of pyridyl, thiazolyl, morpholine, furanyl and indole,

which alkyl, naphthyl, phenyl and heterocyclic groups are attached to the carbons of the above formula either directly through a carbon of said groups or indirectly through a carbonyl group,

but not more than one of R and R^1 may be hydrogen,

is condensed in a reaction mixture with a carbamic acid ester selected from the group consisting of alkyl, phenyl and benzyl esters of carbamic acid, in the presence of an aprotic solvent and a basic condensing agent selected from the group consisting of an alkali metal, an alkali metal hydride and an alkali metal alcoholate at a temperature of between 20° C. and 200° C.

4,275,201

ARYL SUBSTITUTED DIKETONES

Joseph C. Collins, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

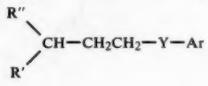
Division of Ser. No. 885,353, Mar. 13, 1978, Pat. No. 4,189,500, which is a division of Ser. No. 740,358, Nov. 10, 1976, Pat. No. 4,093,736, which is a continuation-in-part of Ser. No. 545,486, Jan. 30, 1975, Pat. No. 4,171,378, which is a continuation-in-part of Ser. No. 436,611, Jan. 25, 1974, Pat. No. 3,917,718, which is a continuation-in-part of Ser. No. 265,333, Jun. 22, 1972, Pat. No. 3,829,475. This application Feb. 14, 1979, Ser. No. 12,206

Claims priority, application United Kingdom, Jun. 18, 1973, 28793/73

Int. Cl.³ C07D *265/30*

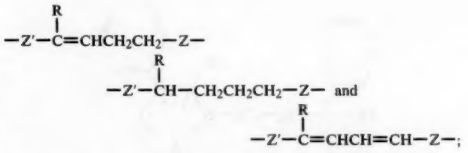
U.S. Cl. 544—171 **26 Claims**

1. A compound of the formula



wherein

Y is selected from the group consisting of



R′ and R″ are lower-alkanoyl of 2 to 6 carbon atoms;

R is hydrogen or lower-alkyl of 1 to 4 carbon atoms;

Z is a single bond, vinylene only when the remainder of Y is unsaturated, or ethylene only when Y is saturated;

Z′ is a single bond, methylene or ethylene; and

Ar is phenyl substituted by a single substituent selected from the group consisting of carbo-lower-alkoxy of 2 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, acyloxy of 1 to 10 carbon atoms, dialkylamino where alkyl has from 1 to 4 carbon atoms, and aminosulfonyl.

4,275,202

PRODUCTION OF A PURIFIED CYANURIC ACID DIHYDRATE

Richard E. Hall, Trenton, and Basil A. Guiliano, Plainsboro, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jul. 18, 1980, Ser. No. 170,280

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **16 Claims**

11. A process for the production of a purified cyanuric acid dihydrate from an anhydrous cyanuric acid contaminated with amounts of occluded sulfolane which comprises recrystallizing at about ambient temperature substantially all of the contaminated anhydrous cyanuric acid in an aqueous medium of water and sulfolane under conditions sufficient to form the cyanuric acid dihydrate, separating the cyanuric acid dihydrate from the aqueous medium, and washing the cyanuric acid dihydrate with water.

4,275,203

PROCESS FOR THE PRODUCTION OF CHLORO-AMINO-S-TRIAZINES

Klaus Hentschel, Kalmthout, Belgium, and Friedrich Bittner, Bad Soden, Fed. Rep. of Germany, assignors to Deutsche Gold und Silber Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,876

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850331

The portion of the term of this patent subsequent to Jun. 2, 1998, has been disclaimed.

Int. Cl.[3] C07D *251/44, 403/04*

U.S. Cl. 544—194 **17 Claims**

1. A process for the production of chloroamino-s-triazine by reacting cyanuric chloride with an amine or an 2-aminonitrile in the presence of an acid binding agent comprising spraying cyanuric chloride downwardly and outwardly at a temperature in its molten range from the upper portion of a verticle tubular zone closed at the top thereof to contact and mix with the other reactant or reactants which form a liquid layer defining said tubular zone, constricting said layer in breast-shaped manner downwardly below the place of entry of the cyanuric chloride into the tubular zone to form a narrower discharge opening, discharging said other reactant or reactants as a spray tangentially to said layer and directed slightly upwardly in the direction of the closed top and above said constriction and below the point of introduction of the cyanuric chloride and thereby forming said liquid layer along the entire tubular zone to the point of introduction of the cyanuric chloride, whereby the thickness of said layer where it is formed in the breast-shaped constriction is greater than it is in the remainder of the tubular zone.

4,275,204

PREPARATION OF CHLORO-BIS(ALKYLAMINO)-S-TRIAZINES

Vittorio Messori; Renato Francese, and Roberto Esposito, all of Turin, Italy, assignors to Rumianca S.p.A., Turin, Italy

Filed Sep. 7, 1979, Ser. No. 73,360

Int. Cl.[3] C07D *251/50*

U.S. Cl. 544—204 **9 Claims**

1. In a process for preparing chloro-bis(alkylamino)-s-triazine by step-wise replacement of two chlorine atoms of cyanuric chloride by means of alkylamino groups in a medium comprising water and a liquid organic compound which is a solvent for cyanuric chloride, by reaction in a first step of a first amine, cyanuric chloride and alkali metal hydroxide in substantially equimolecular amounts and by reaction in a second step of the resulting mono(alkylamino)-s-triazine, a second amine and alkali metal hydroxide in substantially equimolar amounts, the improvement which comprises using an organic compound which is substantially immiscible with water and carrying out said first step by contacting said first amine with a reaction medium containing the cyanuric chloride and the whole of the alkali metal hydroxide used for the step-wise replacement.

4,275,205

7,7-DITOSYLOXYMETHYL-4,5α-EPOXY-MORPHINAN-6-OLS

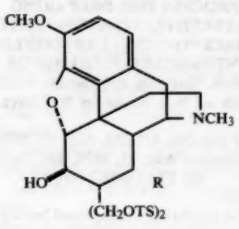
Michael P. Kotick, and David L. Leland, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 5, 1980, Ser. No. 146,384

Int. Cl.[3] C07D *489/02;* **A61K** *31/485*

U.S. Cl. 546—44 **4 Claims**

1. A 7,7-ditosyloxymethyl-4,5α-epoxy-3-methoxy-17-methyl-morphinan-6β-ol of the formula:



where R is H, CH_3 or CH_2CH_3.

4,275,206

LACTONE COMPOUNDS CONTAINING AN INDOLIZINE RADICAL

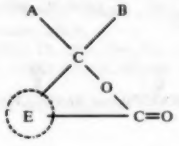
William J. Becker; Sheldon Farber, and Troy E. Hoover, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 17,764, Mar. 5, 1979, Pat. No. 4,232,887. This application Jan. 16, 1980, Ser. No. 112,500

Int. Cl.[3] C07D *491/048*

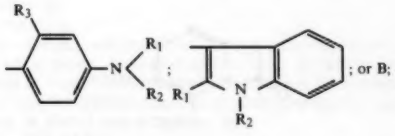
U.S. Cl. 546—115 **7 Claims**

1. A compound represented by the formula:



wherein E is:

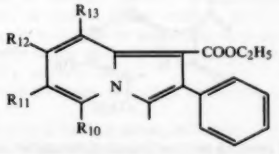
A is:



R_1 and R_2 are: hydrogen or lower alkyl;

R_3 is: hydrogen or to lower alkoxy;

B is:



R_{10}, R_{11}, R_{12} and R_{13} are: hydrogen or lower alkyl.

4,275,207
PROCESS FOR PREPARING 7-(1-HYDROXYETHYL)-3-(2-AMINOETHYLTHIO)-1-CARBADETHIACEPH-3-EM-3-CARBOXYLIC ACID AND INTERMEDIATE THEREFOR

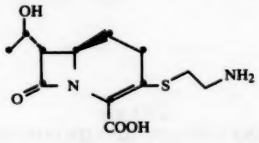
Ronald W. Ratcliffe, Matawan, and Thomas N. Salzmann, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 933,322, Aug. 14, 1978, abandoned. This application Aug. 17, 1979, Ser. No. 67,599

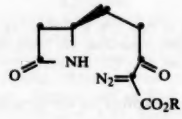
Int. Cl.³ C07D *471/04*

U.S. Cl. 546—183 **3 Claims**

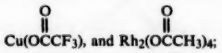
1. A process for preparing a compound having the structure:



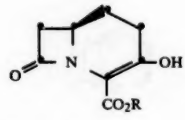
which comprises the steps of cyclizing:



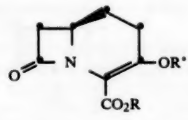
in the presence of a catalyst selected from: bis-(acetylacetonato)Cu,



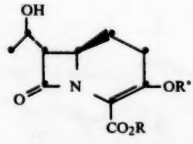
to form:



followed by esterifying to form:

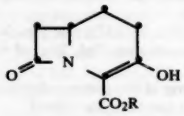


followed by alkylating in the presence of base with acetaldehyde to form:



followed by treating with aminoethylmercaptan and deblocking wherein R is a readily removable carboxyl blocking group selected from the group consisting of t-butyl, p-methoxybenzyl, benzhydryl, p-nitrobenzyl, and p-methoxybenzyl and R* is a leaving group selected from the group consisting of tosyl, mesyl, or nosyl.

2. A compound having the structure:



wherein R is a blocking group selected from the group consisting of t-butyl, p-methoxybenzyl, benzhydryl, p-nitrobenzyl, and p-nitrobenzyl.

4,275,208
PREPARATION OF 1-PIPERIDINE-CARBODITHIOIC ACID PIPERIDINIUM SALT

Leonard A. Rothman, Great Neck, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1980, Ser. No. 144,298

Int. Cl.³ C07D *401/12*

U.S. Cl. 546—189 **6 Claims**

1. A process for preparing 1-piperidine-carbodithioic acid piperidinium salt comprising reacting piperidine in water with carbon bisulfide. and heating to 52°–56° C.

4,275,209
XANTHENE AND THIOXANTHENE DERIVATIVES

Niels Lassen, Gentofte; Klaus P. Bogeso, Lyngby; Peter B. Hansen, Allerod; Jørn L. M. Buus, Bjæverskov, and Allan J. Bigler, Copenhagen, all of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

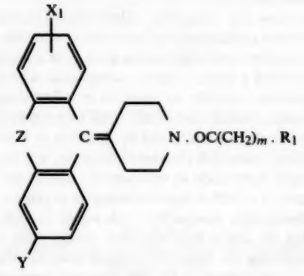
Division of Ser. No. 35,735, May 3, 1979. This application Dec. 21, 1979, Ser. No. 106,353

Claims priority, application United Kingdom, May 12, 1978, 19310/78

Int. Cl.³ C07D *409/04*

U.S. Cl. 546—202 **3 Claims**

1. A compound of the formula:



wherein X_1, Y, Z, m and R_1 are defined as follows:

X_1 is a halogen atom, an alkyl group with one to four carbon atoms inclusive, an alkoxy group with one to four carbon atoms inclusive, a methylmercapto group, or a trifluoromethyl group;

Y is hydrogen, fluorine, or a methyl group;

Z is oxygen or sulphur;

m is zero or an integer from one to two, inclusive; and

R_1 is a cycloalkyl group with four to six carbon atoms inclusive in the ring, which is substituted with one to four substituents selected from the group consisting of: amino; acetamino; mesylamino; and protected hydroxy- or protected hydroxymethyl, any such protected hydroxy or

hydroxymethyl group present being protected by esterification into an ester of an aliphatic carboxylic acid having ten to twenty-two carbon atoms inclusive; and, when a previously-named substituent is present, also methyl.

4,275,210
SUBSTITUTED 2-ANILINOBENZOXAZOLES

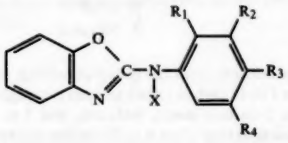
Charles J. Paget, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 419,733, Nov. 28, 1973, Pat. No. 4,088,770, and a continuation-in-part of Ser. No. 255,702, May 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 188,544, Oct. 12, 1971, Pat. No. 3,743,792, which is a continuation-in-part of Ser. No. 140,289, May 4, 1971, abandoned. This application Feb. 15, 1978, Ser. No. 878,037

Int. Cl.³ C07D *263/58*; A61K *31/42*

U.S. Cl. 546—222 **6 Claims**

1. A compound of the formula



wherein,

X is hydrogen, C_1–C_4 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkoxy C_1–C_3 alkyl, carboxy, carboxy C_1–C_3 alkyl, amino C_1–C_3 alkyl, mono-C_1–C_3 alkylamino C_1–C_3 alkyl, Di-C_1–C_3 alkylamino C_1–C_3 alkyl, anilino C_1–C_3 alkyl, C_1–C_3 alkylthio, C_1–C_3 alkylsulfonyl, phenyl, phenyl C_1–C_3 alkyl, or carbanilino;

R_1, R_2, R_3, and R_4, when only one is a substituent other than hydrogen, are trifluoromethyl, carboxy, carboxy C_1–C_3 alkyl, C_1–C_3 alkoxy C_1–C_3 alkyl, C_1–C_3 alkylcarbonyl, carb C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfonyl, or phenyl;

R_1, R_2, R_3, and R_4, when any two are substituents other than hydrogen are bromine, chlorine, fluorine, or trifluoromethyl, with the proviso that when X is other than hydrogen, all of R_1, R_2, R_3, and R_4 can be hydrogen.

4,275,211
PROCESS FOR PREPARING 2,2,6,6-TETRAALKYL-4-OXOPIPERIDINES

Ivan Orban, and Eduard Troxler, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

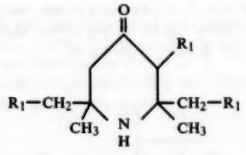
Filed Nov. 5, 1979, Ser. No. 91,006

Claims priority, application Switzerland, Nov. 17, 1978, 11829/78

Int. Cl.³ C07D *211/74*

U.S. Cl. 546—242 **8 Claims**

1. In the process for producing a piperidine compound of the formula (I)



(I)

in which R_1 is hydrogen or C_1–C_4-alkyl, from a ketone of the formula (II) R_1—CH_2—C(O)—CH_3 (II), wherein R_1 has the meaning given above, and ammonia, at temperatures of 5°–90° C. in the presence of a catalyst, the improvement which comprises using as said catalyst a strongly acid ion exchanger having a medium or large mesh size, or having large macropores.

4,275,212
METHOD OF PREPARING PYRIDINYLOXYPHENOLS AND DERIVATIVES

Jon A. Orvik, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 824,377, Aug. 15, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,646

Int. Cl.³ C07D *213/63, 213/68*

U.S. Cl. 546—290 **24 Claims**

1. In the process for preparing ring substituted or unsubstituted pyridinyloxyphenol compounds by reaction of a preselected reactive 2(6)- or 4-substituted pyridine reactant with about an equimolar amount of a preselected hydroquinone reactant in the presence of a base, the improvement which comprises: adding the base over a ½ hour to 1½ hour period and carrying out the said reaction at the requisite temperature and with the requisite molar ratio of base to hydroquinone reactant whereby product is formed in less than about 8 hours that contains less than about 10 mole percent of the corresponding bis(pyridinyloxy)benzene by-product, based on the weight of the desired pyridinyloxyphenol product formed, the reaction temperature being in the range of from about 50° to about 130° C. and the said molar ratio being in the range of from about 1.5:1 to about 2:1, and the reaction being carried out under an inert atmosphere and in an inert reaction medium.

4,275,213
ISOXAZOLYL DERIVATIVES OF 9α,11α-EPOXY IMINO-9,11,15-TRIDEOXY-PGF-TYPE COMPOUNDS

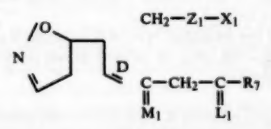
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 12, 1980, Ser. No. 148,631

Int. Cl.³ C07D *261/04, 413/12, 413/06*

U.S. Cl. 548—240 **45 Claims**

1. A compound of the formula I



I

or a pharmacologically acceptable salt thereof,

wherein D represents the E or Z configuration,

wherein M_1 is oxo, α-OH:β-H, β-OH:α-H, α-OOH:β-H, or β-OOH:α-H;

wherein X_1 is

(1) $—CO_2R_1$, wherein R_1 is hydrogen, alkyl of from one to 12 carbon atoms, cycloalkyl of from 3 to 10 carbon atoms, aralkyl of from 7 to 12 carbon atoms, phenyl, phenyl mono-, di-, or trisubstituted by chloro or alkyl of from one to 3 carbon atoms, or phenyl para-substituted by

(i) $—NHCO-R_{25}$

(ii) $—O—CO—R_{26}$

(iii) $—CO_2R_1$

(iv) $—C—CO—(p\text{-}Ph)—R_{27}$

(v) $—CH=N—NH—CO—NH_2$

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, phenyl, amino or methoxy; R_{27} is hydrogen or acetamido or a pharmacologically acceptable cation and —(p-Ph) is 1,4-phenylene,

(2) $—COW_1$, wherein W_1 is

(a) amido of the formula—$NR_{21}R_{22}$, wherein R_{21} and R_{22} are hydrogen;

alkyl of one to 12 carbon atoms, inclusive;

cycloalkyl of 3 to 10 carbon atoms, inclusive;

aralkyl of 7 to 12 carbon atoms, inclusive;

phenyl;
phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
carboxyalkyl of one to four carbon atoms, inclusive;
carbamoylalkyl of one to 4 carbon atoms, inclusive;
cyanoalkyl of one to 4 carbon atoms, inclusive;
acetylalkyl of one to 4 carbon atoms, inclusive;
benzoylalkyl of one to 4 carbon atoms, inclusive;
benzoylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
pyridyl;
pyridyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
pyridylalkyl of one to 4 carbon atoms, inclusive; or
pyridylalkyl substituted by one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, hydroxyalkyl of one to 4 carbon atoms, inclusive, dihydroxyalkyl of one to 4 carbon atoms, inclusive, or trihydroxyalkyl of one to 4 carbon atoms inclusive;

with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamido selected from the group consisting of
1-pyrrolidinyl,
1-piperidinyl,
4-morpholinyl,
hexahydro-1H-azepin-1-yl, 3-pyrrolin-1-yl, or
3,6-dihydro-1(2H)-pyridinyl, substituted by R_{21}, or R_{22} or both or
1-piperazinyl substituted on the 4-position by R_{21}, wherein R_{21} and R_{22} are as defined above;

(c) carbonylamido of the formula—$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is defined above;

(d) sulfonylamido of the formula—$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined above; or

(e) hydrazino of the formula—$NR_{23}R_{24}$, wherein R_{24} is amido of the formula—$NR_{21}R_{22}$, as defined above, or cycloamido, as defined above; or

(3) CH_2OH

(4) —$CH_2NR_{11}R_{12}$ wherein R_{11} and R_{12} are the same or different and are hydrogen or alkyl of from one to 4 carbon atoms;

wherein Z_1 is
(1) cis—CH=CH—$CH_2(CH_2)_g$—CH_2—,
(2) cis—CH=CH—$CH_2(CH_2)_g$—CF_2,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) $CH_2)_3$—$(CH_2)_g$—CH_2
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —(m-Ph)—$CH_2(CH_2)_g$—, or
(8) —(m-Ph)—O—$(CH_2)_g$—,

wherein g is an integer from one to 3 and (m-Ph) is 1,3-phenylene;

wherein L_1 is α-R_3:β-R_4, β-R_3:α-R_4 or a mixture of the two, wherein R_3 and R_4 are the same or different and are hydrogen, methyl, of fluoro, with the proviso that if R_3 is fluoro, R_4 is hydrogen or fluoro;

wherein R_7 is
(1) —$(CH_2)_m$—CH_3
(2) —O—(PhI) or
(3) —$(CH_2)_n$—(PhI)

wherein m is an integer from one to 5, n is an integer from 0 to 4, and (PhI) is phenyl substituted by from 0 to 3, chloro, fluoro, trifluoromethyl, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, with the proviso that not more than two substituents are other than alkyl.

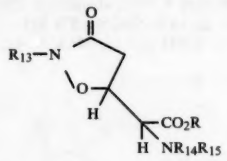
4,275,214

SUBSTITUTED ALKOXY CARBONYL-3-OXO-α-PHTHALIMIDO-5-ISOXOZOLIDINEACETIC ACIDS

Robert C. Kelly, and Wendell Wierenga, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

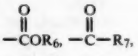
Continuation-in-part of Ser. No. 906,276, May 15, 1978, abandoned. This application Jul. 31, 1979, Ser. No. 62,459
Int. Cl.³ C07D *413/06, 261/04*
U.S. Cl. 548—243 **37 Claims**

1. Racemic mixtures and optically active isomers of compounds having the formula

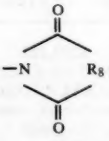


II

wherein R is selected from the group consisting of hydrogen alkyl of from 1 to 12 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive; R_{13} is hydrogen, alkyl of from 1 to 8 carbon atoms, inclusive, alkoxycarbonyl, halogenated alkoxy carbonyl and aralkoxycarbonyl; R_{14} and R_{15} are selected from the group consisting of hydrogen,

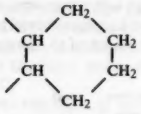


or when taken together with the nitrogen atoms form the group



wherein R_6 is alkyl of from 1 to 8 carbon atoms, inclusive, halogenated alkyl of from 1 to 5 carbon atoms, inclusive, and 1 to 3 halogen atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive, R_7 is selected from the group consisting of alkyl of from 1 to 12 carbon atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aryl of from 6 to 20 carbon atoms, inclusive, aralkyl of from 7 to 20 carbon atoms, inclusive, and substituted aralkyl of from 7 to 20 carbon atoms, inclusive, and R_8 is selected from the group consisting of

where R_9, R_{10}, R_{11} and R_{12} are selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive,



orthointerphenylene, and substituted orthointerphenylene, with the proviso that other than when R_{14} and R_{15} form a ring with the nitrogen atom, one of R_{14} and R_{15} must always be hydrogen, and the further proviso that when R_{13}, R_{14} and R_{15} are all hydrogen, or R_{14} or R_{15} is

R cannot be hydrogen or alkyl of from 1 to 12 carbon atoms, and that when R_{13} is aralkoxycarbonyl or halogenated alkoxy carbonyl, neither

can be aralkoxycarbonyl or halogenated alkoxycarbonyl, nor

be aralkoxycarbonyl or halogenated alkylcarbonyl.

4,275,215

PROCESS FOR PREPARING 1-ARYL-2-BENZIMIDAZOLINONES

Robin R. Ison, Norfolk, England, assignor to Dow Chemical Company Limited, King's Lynn, England

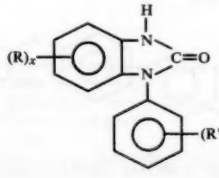
Filed Jun. 17, 1980, Ser. No. 160,269

Claims priority, application United Kingdom, May 3, 1978, 17567/78

Int. Cl.³ C07D *235/26*

U.S. Cl. 548—305 **10 Claims**

1. A process for preparing 1-aryl-2-benzimidazolinones of the formula



(I)

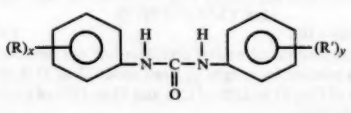
wherein

R and R′ are independently C_1–C_4 alkyl, C_1–C_4 alkoxy or alkylthio, fluoro, bromo or chloro, and

x and y are individually 0, 1 or 2,

which process comprises reacting by contacting:

(a) a carbanilide of the formula



(II)

wherein R, R′, x and y are defined as in (I); with

(b) a hypohalite ion, in which the halogen is chlorine, bromine or iodine,

wherein the carbanilide and hypohalite ion are contacted as a liquid, biphasic mixture, the biphasic mixture consisting of a liquid organic phase comprising the carbanilide dissolved in an inert, organic solvent and an aqueous phase containing the hypohalite ion, the contacting conducted in the presence of a catalytic amount of a quaternary ammonium and/or phosphonium salt catalyst.

4,275,216

PROCESS FOR PREPARING 4(5)-HYDROXYMETHYL 5(4)-LOWER ALKYL IMIDAZOLES

Yves A. Hubert-Brierre, Vienne, France, assignor to Delalande S.A., Courbevoie, France

Filed Jul. 31, 1979, Ser. No. 62,501

Claims priority, application France, Aug. 30, 1978, 78 25051

Int. Cl.³ C07D *233/64*

U.S. Cl. 548—342 **24 Claims**

1. In a process for preparing 4(5)-hydroxymethyl-5(4)-lower alkyl imidazoles, in which 5(4)-lower alkyl imidazole is reacted with formaldehyde, the improvement which comprises: the reaction is carried out in the presence of a strong base and the reaction temperature is from above 60° to 95° C.

4,275,217

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE α-AMINO ACIDS AND THEIR DERIVATIVES

Lucette Duhamel, Mont-Saint-Aignan, and Jean-Christophe Plaquevent, Maromme, both of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Jul. 9, 1979, Ser. No. 56,106

Claims priority, application France, Jul. 7, 1978, 78 20345

Int. Cl.³ C07D *233/64;* **C07B** *19/00*

U.S. Cl. 548—344 **25 Claims**

1. A process for preparing a chiral α-amino acid or a derivative thereof, having a hydrogen substituent in a position alpha to the carboxylic function or a derivative thereof, said process utilizing as an initial reactant a corresponding optical antipode or a mixture thereof with said chiral amino acid or a derivative thereof, said process comprising submitting said initial reactant to the action of a strong base so as to remove the proton in a position alpha to the carboxylic function or derivative thereof, and reacting the resulting product with a sterically hindered chiral protonation agent which is a chiral acid having at least one cyclic substituent or a branched group.

2. The process of claim **1** wherein said amino acid or its derivative is selected from the group consisting of phenylglycine, alanine, phenylalanine, valine, leucine, isoleucine, tyrosine, serine, threonine, methionine, tryptophane, arginine, lysine, histidine and derivatives thereof.

4,275,218

SULFOLENE HYDROGENATION

Edward E. Huxley, and Martin E. Nash, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 14, 1980, Ser. No. 168,886

Int. Cl.³ C07O *333/48*

U.S. Cl. 549—87 **10 Claims**

1. A process for the production of a sulfolane compound which comprises contacting at least one sulfolene compound with hydrogen and a metal hydrogenation catalyst in the presence of an effective amount of ammonia under suitable hydrogenation conditions to convert said sulfolene compound to the corresponding sulfolane compound.

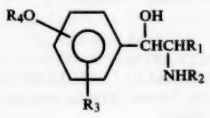
4,275,219

NOVEL PROCESS AND INTERMEDIATES USEFUL IN THE PREPARATION OF SYMPATHOMIMETIC AMINES

Jacob A. Zupan, Lawrence, Kans., assignor to INTERx Research Corporation, Lawrence, Kans.

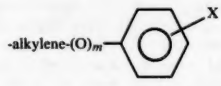
Filed Sep. 24, 1979, Ser. No. 78,197
Int. Cl.[3] C07C *125/065, 69/017*
U.S. Cl. 560—29 **44 Claims**

1. A process for the preparation of a compound of the formula



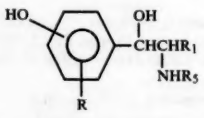
(I)

wherein R_1 is H or alkyl of 1 to 7 carbon atoms; R_2 is H, alkyl of 1 to 7 carbon atoms, or



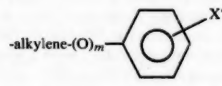
wherein m is zero or one, the alkylene portion contains 1 to 5 carbon atoms, and X is H or $—OR_4'$ wherein R_4' is identical to R_4 as defined below; R_3 is H, Cl, $—CH_2OH$ or $—OR_4''$ wherein R_4'' is identical to R_4 as defined below; and R_4 is an acyl radical; or a nontoxic pharmaceutically acceptable acid addition salt thereof; which comprises:

(a) reacting a compound of the formula



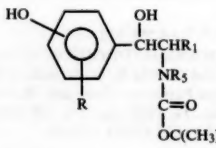
(II)

wherein R_1 is defined as above; R is H, Cl, $—CH_2OH$ or —OH; and R_5 is H, alkyl of 1 to 7 carbon atoms, or



wherein m and alkylene are defined as above and X' is H or —OH; with a reagent capable of forming the N-tert-butoxycarbonyl derivative thereof;

(b) reacting the resultant N-tert-butoxycarbonyl compound of the formula



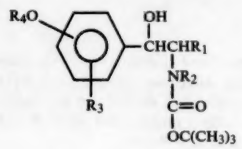
(III)

wherein R, R_1 and R_5 are defined as above, with an acyloxymethyl chloride of the formula

R_4OCH_2Cl (IV)

wherein R_4 is an acyl radical, in an organic solvent in the presence of a base, to effect acylation of all phenolic hydroxy groups in said compound of formula (III); and

(c) removing the tert-butoxycarbonyl protecting group from the resultant compound of the formula



(V)

wherein R_1, R_2, R_3 and R_4 are defined as above.

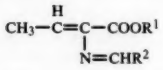
4,275,220

PROCESS FOR PREPARING AMINO ACIDS AND ESTERS

Arthur A. Patchett, Westfield, N.J., and William J. Greenlee, New York, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 927,208, Jul. 24, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 64,348
Int. Cl.[3] C07C *101/28*
U.S. Cl. 560—35 **3 Claims**

1. Compounds having the formula:



wherein R^1 is lower alkyl and R^2 is the residue of an aldehyde R^2CHO having no α-hydrogen.

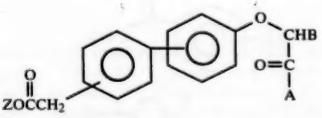
4,275,221

DERIVATIVES OF 2-NITROBENZOFURAN

Walton J. Hammar, and Mark A. Rustad, both of St. Paul, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 13,543, Feb. 21, 1979, Pat. No. 4,208,337, which is a division of Ser. No. 620,140, Dec. 19, 1977, Pat. No. 4,153,721. This application Jan. 21, 1980, Ser. No. 113,532
Int. Cl.[3] C07C *69/66, 65/21, 69/77*
U.S. Cl. 560—53 **1 Claim**

1. A compound of the formula



wherein Z is hydrogen or alkyl of one to four carbon atoms, A is methyl or ethyl and B is hydrogen or ethyl carboxylate.

4,275,222

BENZOATE ESTER COMPOSITIONS

Thomas L. Scala, Jr., West Milford, N.J., assignor to Finetex, Inc., Elmwood, N.J.

Continuation-in-part of Ser. No. 949,630, Oct. 10, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 74,071
Int. Cl.[3] C07C *69/78*
U.S. Cl. 560—103 **1 Claim**

1. A composition of matter consisting of the benzoic acid esters of a mixture by weight of from about 23 to 31% of C_{12}, 32 to 44% of C_{13}, 17 to 23% of C_{14}, and 12 to 18% of C_{15} linear primary alcohols.

4,275,223
PREPARATION OF TRANS-CYCLOHEXANE-1,4-DIURETHANES

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 883,949, Mar. 6, 1978, Pat. No. 4,203,916. This application Jun. 18, 1979, Ser. No. 49,112

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710595

Int. Cl.³ C07C *125/04*

U.S. Cl. 560—115 **6 Claims**

1. A process for the preparation of trans-cyclohexane-1,-4-diurethane, which comprises (a) reacting ammonia with cyclohexane-1,4-dicarboxylic acid, or a lower alkyl ester, a glycol ester, an oligomeric ester or a polyester thereof or a mixture of such compounds at an ammonia partial pressure of from 0.1 to 50 bar in a polyhydric alcohol at a temperature of from about 25° C. to about 200° C., (b) separating the resulting solid dicarboxylic acid diamide precipitated under these conditions from the reaction mixture, (c) freeing the solid diamide from water soluble constituents adhering thereto, (d) suspending the resulting solid diamide in an aqueous mineral acid or in water, (e) chlorinating the diamide at a temperature of from 0° C. to 40° C. to form cyclohexane-1,4-dicarboxylic acid-bis-N-chloramide, and (f) reacting the chloramide with a monohydric alcohol, a polyhydric alcohol, or a carbocyclic or heterocyclic phenol which is capable of at least partly dissolving an alkali metal or alkaline earth metal hydroxide in the presence of said alkali metal or alkaline earth metal hydroxide to form trans-cyclohexane-1,4-diurethane.

4,275,224
15-DEOXY-16-HYDROXY PROSTAGLANDINS

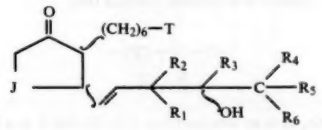
Harold C. Kluender; Warren D. Woessner, and William G. Biddlecom, all of Madison, Wis., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 880,501, Feb. 23, 1978, Pat. No. 4,132,738. This application Dec. 26, 1978, Ser. No. 973,010

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—116 **15 Claims**

1. A compound having the formula:



wherein:

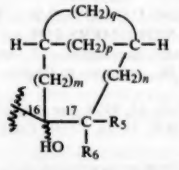
J is selected from the group consisting of R-hydroxymethylene and S-hydroxymethylene;

T is alkyloxycarbonyl having from 1 to 2 carbon atoms inclusive in the alkyl group;

R_1 is hydrogen;

R_2 is hydrogen or together with R_4 is an alkylene chain of 2 to 3 carbon atoms such that a cycloalkyl of 5 to 6 carbon atoms inclusive is formed;

R_3 is hydrogen or together with R_4 is a bicycloalkenyl or bicycloalkyl moiety having the formula:



such that a bicycloalkyl or bicycloalkenyl compound is formed, wherein m and n are integers having a value of from 0 to 3, p is an integer having a value of from 0 to 4 and q is an integer having a value of from 1 to 4 and wherein the double bond of such bicycloalkenyl is in the m, n, p or q bridge;

R_4 together with R_2 forms a cycloalkyl or together with R_3 forms a bicycloalkyl or bicycloalkenyl as defined above or together with R_5 is a methylene chain of 3 to 4 carbon atoms such that a cycloalkyl of 4 to 5 carbon atoms inclusive is formed; and

R_5 is hydrogen or together with R_4 is a cycloalkyl as defined above;

R_6 is hydrogen or a straight-chain alkyl of 1 to 3 carbon atoms.

4,275,225
POLYFLUOROALLYLOXY COMPOUNDS, THEIR PREPARATION AND COPOLYMERS THEREFROM

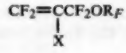
Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 20,354, Mar. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 850,729, Nov. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,029, Dec. 2, 1976, abandoned. This application May 1, 1980, Ser. No. 145,756

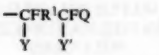
Int. Cl.³ C07C *69/734, 59/58*

U.S. Cl. 560—174 **7 Claims**

1. A polyfluoroallyloxy compound having the formula:



wherein X is —Cl or —F, and R_F is:

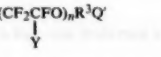


(i)

wherein R^1 is a carbon-carbon bond or a linear or branched perfluoroalkylene group of 1 to 12 carbon atoms; Q is $—CO_2H$ or $—CO_2R^4$ where R^4 is $—CH_3$ or $—C_2H_5$; Y and Y', independently, are —F or $—CF_3$ providing that only one of Y and Y' can be $—CF_3$; or

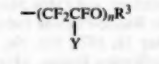
(ii)

wherein R^2 is $—CF_2CO_2H$, or $—CF_2CO_2R^4$ where R^4 is defined as above; or

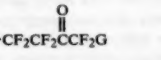


(iii)

wherein R^3 is a linear or branched perfluoroalkylene group of carbon content such that the moiety



does not exceed 15 carbon atoms; Y is —F or $—CF_3$; n is 1 to 4; and Q' is defined as for Q above; or



(iv)

wherein G is $—CO_2H$ or $—CO_2R^4$ where R^4 is $—CH_3$ or $—C_2H_5$.

4,275,226

PROCESS FOR PRODUCING FLUOROVINYL ETHER

Masaaki Yamabe, Machida; Seisaku Kumai, Yokohama, and Seiji Munekata, Tokyo, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,347

Claims priority, application Japan, Aug. 25, 1978, 53/102686; Aug. 25, 1978, 53/102687

Int. Cl.³ C07C *69/734, 143/00, 57/065, 41/24*

U.S. Cl. 560—183 **15 Claims**

1. A process for producing a fluorovinyl ether having the formula

$$XRfCF_2OCF{=}CF_2 \qquad (I)$$

wherein X represents —H, —Cl, —Br, —F, $-CO_2R$, —CONRR′, $-SO_2F$,

or —COF and R represents a C_1–C_{10} alkyl group; R′ represents —H or a C_1–C_{10} alkyl group; Rf represents a C_1–C_{20} bifunctional perfluoro-containing group which can have one or more ether bonds, which comprises reacting an iodine containing ether having the formula:

$$XRfCF_2OCF_2CF_2I \qquad (II)$$

wherein X and Rf are as defined above, in the presence of a particulate, metallic catalytic component selected from the group consisting of Mg, Cu, Zn, Sn, and Sb.

4,275,227

SYNTHESIS OF WATER SOLUBLE CROSS-LINKERS AND THEIR USE IN THE MANUFACTURE OF ANIONIC POLYMERS

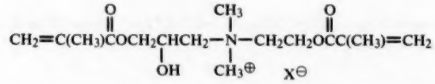
Russell J. MacDonald, Woburn, Mass., assignor to Ionics Inc., Watertown, Mass.

Filed Oct. 12, 1979, Ser. No. 84,337

Int. Cl.³ C07C *69/527*

U.S. Cl. 560—222 **2 Claims**

1. A water soluble, ionic, cross-linking bifunctional monomer of the formula:



where X represents a univalent anion of an acid.

4,275,228

CATALYTIC PREPARATION OF ETHYL ACETATE

Max Gruffaz, La Mulatiere, and Odile Micaelli, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

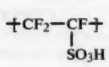
Filed May 16, 1979, Ser. No. 39,565

Claims priority, application France, May 17, 1978, 78 15355

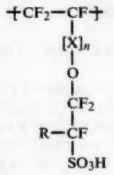
Int. Cl.³ C07C *67/05*

U.S. Cl. 560—247 **23 Claims**

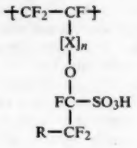
1. In a process for the preparation of ethyl acetate by vapor phase reaction of ethylene with acetic acid, the improvement which comprises conducting said reaction in the presense of a catalytic amount of a solid, ion-exchange fluoropolymer comprising pendant sulfonic acid moieties, said fluoropolymer comprising recurring structural units selected from the group comprising a unit of structural formula (I):



a unit of structural formula (II):



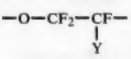
and a unit of structural formula (III):



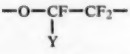
wherein, n is an integer from 1 to 5, R is a fluorine atom or a monovalent perfluoroalkyl radical comprising from 1 to 10 carbon atoms, and X is radical selected from the group comprising a radical of structural formula (i):

$$-O-(CF_2)_m$$

a radical of structural formula (ii):



and, a radical of structural formula (iii):



wherein, m is an integer from 2 to 10, and Y is a fluorine atom or a trifluoromethyl group.

4,275,229

POLYMERS HAVING IMPROVED WATER RESISTANCE AND MONOMERS FOR SAME

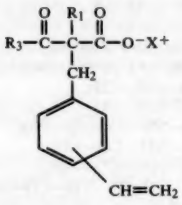
Stamatios G. Mylonakis, Barrington, and Anthony J. Tortorello, Elmhurst, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Feb. 12, 1979, Ser. No. 11,701

Int. Cl.³ C07C *59/86, 57/34;* **C08F** *116/36*

U.S. Cl. 562—459 **3 Claims**

1. Carboxyl functional monoethylenically unsaturated monomer having the formula:



wherein R_1 is selected from the group consisting of hydrogen and C_1–C_8 alkyl;
R_3 is selected from the group consisting of C_1–C_8 alkyl, O-R_4 where R_4 is hydrogen or X^+; and
X^+ is selected from the group consisting of the proton, protonated volatile bases, and mixtures thereof.

4,275,230

PURIFICATION OF DICARBOXYLIC ACIDS

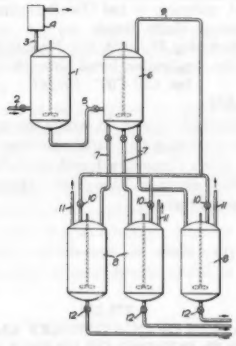
Peter A. Donaldson, Middlesbrough, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 816,667, Jul. 18, 1977, abandoned. This application Dec. 14, 1978, Ser. No. 969,431

Claims priority, application United Kingdom, Aug. 11, 1976, 33383/76

Int. Cl.[3] **C07C** *51/42*

U.S. Cl. 562—486 **7 Claims**



1. A process for the crystallization of terephthalic acid which has been purified from 4-carboxybenzaldehyde by catalytic hydrogenation in aqueous solution at elevated temperature and pressure so as to convert the 4-carboxybenzaldehyde to p-toluic acid which comprises:

(1) releasing continuously the aqueous solution consisting essentially of water, terephthalic acid and p-toluic acid at a temperature above 250° C. and under pressure to a continuous crystallization stage operating continuously to effect evaporative cooling whereby solid terephthalic acid crystallizes to give an aqueous slurry thereof,

(2) releasing the said slurry to a batch crystallization stage comprising one or more batch crystallizers, each batch crystallizer being heated and pressurized to a temperature and pressure approaching that of the aqueous slurry effluent from the continuous crystallization stage prior to receiving that slurry and steam being released from each batch crystallizer after receiving slurry to effect evaporative cooling whereby further terephthalic acid crystallizers and

(3) removing slurry from each batch crystallizer after releasing steam, and separating terephthalic acid from the aqueous mother liquor containing p-toluic acid.

4,275,231

19-HYDROXY-19-METHYL-13,14-DIHYDRO-PG$_1$ COMPOUNDS

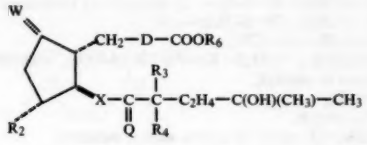
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,196

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



wherein D is
(1) $-(CH_2)_3-(CH_2)_8-CH_2-$, or
(2) $-(CH_2)_3-(CH_2)_8-CF_2-$,
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only
when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH; and
wherein X is $-CH_2CH_2-$.

4,275,232

19-HYDROXY-19-METHYL-INTER-OXA-13,14-DIHYDRO-PG$_1$ COMPOUNDS

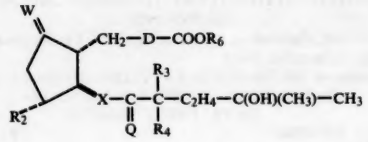
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,198

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



wherein D is
(1) —$(CH_2)_3$—O—CH_2—,
(2) —$(CH_2)_2$—O—$(CH_2)_2$—, or
(3) —CH_2—O—$(CH_2)_3$—,
wherein Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α—OH:β—H, or α—H:β—OH; and
wherein X is —CH_2CH_2—.

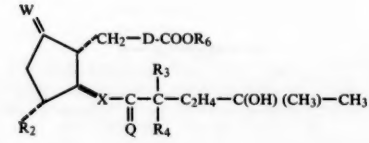
4,275,233

19-HYDROXY-19-METHYL-13,14-DIHYDRO-PG_2 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,878, Apr. 2, 1979, abandoned. This application Mar. 24, 1980, Ser. No. 133,205
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **2 Claims**

1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—, or
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein W is oxo, methylene, α-OH:β:H, or α-H:β-OH; and wherein X is —CH_2CH_2—.

4,275,234

RECOVERY OF ACIDS FROM AQUEOUS SOLUTIONS

Avraham M. Baniel; Ruth Blumberg, and Klara Hajdu, all of Haifa, Israel, assignors to Imi (Tami) Institute for Research and Development, Haifa, Israel

Filed May 31, 1973, Ser. No. 365,506
Claims priority, application Israel, Jun. 19, 1972, 39710
Int. Cl.³ C07C *59/265*
U.S. Cl. 562—584 **19 Claims**

19. The process of claim 1, in which the amine is selected from the class consisting of tri-tridecylamine, trilaurylamine, trioctylamine, dilaurylamine, a liquid secondary amine containing 23 to 26 C atoms, a dilaurylbenzylamine, tricaprylylamine, and mixtures thereof.

4,275,235

PREPARATION OF QUATERNARY AMMONIUM HALIDES IN POWDER OR GRANULAR FORM

Wolfgang Giede, Hilden, and Horst Rutzen, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 16, 1979, Ser. No. 94,961
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853241
Int. Cl.³ C07C *85/04*
U.S. Cl. 564—288 **9 Claims**

1. A process for the preparation of quaternary ammonium halide in the form of powder or granules, which comprises reacting tertiary amine containing two alkyl or hydroxyalkyl radicals with from 1 to 3 carbon atoms and an alkyl radical or β-hydroxyalkyl radical with from 8 to 18 carbon atoms, with excess alkyl halide, the alkyl halide being selected from the group consisting of methyl chloride, methyl bromide, methyl iodide, ethyl chloride, and ethyl bromide, in the absence of solvent at elevated temperature and elevated pressure and conducting the hot reaction mixture, which is under elevated pressure, into an area which is under a lower pressure, where excess alkyl halide vaporizes under the elevated temperature conditions, separating the quaternary ammonium halide in the form of powder or granules.

4,275,236

TERTIARY DI-(β-HYDROXY ORGANO) AMINE OXIDES AND THEIR PREPARATION

Gary W. Earl, Bexley, and Howard M. Hickman, Worthington, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Dec. 26, 1979, Ser. No. 106,746
Int. Cl.[3] C07C *135/02*
U.S. Cl. 564—298 38 Claims

1. A tertiary amine oxide comprising an amine oxide nucleus substituted with an organic group and with two hydroxy substituted organic groups which have carbon atoms in at least the α, β and γ positions, a hydroxyl group on the β-carbon atom, and have an effective chain length of at least 4 carbon atoms, said amine oxide being capable of being provided in ostensibly anhydrous form and being capable of being made at a concentration by weight of at least about 80% by oxidizing the corresponding tertiary amine with an oxidizing agent without solvent and without gelling during said oxidization.

4,275,237

HYDROGENATED POLYNITRILE MIXTURE USEFUL AS AN EPOXY HARDENER

Charles A. Drake, and Ralph P. Williams, both of Bartlesville, Okla., assignors to Philips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 902,191, May 2, 1978, Pat. No. 4,195,155. This application Aug. 6, 1979, Ser. No. 64,281
Int. Cl.[3] C07C *85/12, 87/20, 87/28, 87/34*
U.S. Cl. 564—306 5 Claims

1. A product useful as an epoxy hardener obtained by a process which comprises hydrogenating under hydrogenation conditions the heavy reaction product obtained upon removal by distillation of the light fraction from a reaction mass obtained upon reacting olefinically unsaturated nitrile with monoolefinic hydrocarbon containing an allylic hydrogen atom in the presence of a monoadduct reaction product of a monoolefinic hydrocarbon and an olefinically unsaturated nitrile and recovering a hydrogenate useful as such as said epoxy hardener.

4,275,238

PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL-N-PROPYLAMINE

Harris E. Petree, Kernersville, N.C., and James B. Nabors, Baton Rouge, La., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 10, 1980, Ser. No. 111,055
Int. Cl.[3] C07C *85/08*
U.S. Cl. 564—446 14 Claims

1. A process for the preparation of cyclopropylmethyl-N-n-propylamine which comprises the steps of

(a) cyclizing 1,4-butanediol by a cobalt-containing catalyst to 2,3-dihydrofuran at a temperature in the range of about 210°-235° C.;

(b) thermally isomerizing the 2,3-dihydrofuran to cyclopropanecarboxaldehyde in an open-reactor column; and

(c) reductively alkylating the cyclopropanecarboxaldehyde with n-propylamine and hydrogen in the presence of a platinum catalyst.

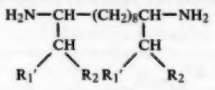
4,275,239

1,10-DIALKYL-1,10-DECAMETHYLENEDIAMINES

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 954,811, Oct. 16, 1978, Pat. No. 4,225,701. This application Feb. 4, 1980, Ser. No. 118,133
Claims priority, application Switzerland, Oct. 28, 1977, 13146/77
Int. Cl.[3] C07C *87/14*
U.S. Cl. 564—511 1 Claim

1. A diamine of the formula Ia



(Ia)

in which R_1' is alkyl having 2–4 C atoms, and R_2 is alkyl having 1–8 C atoms.

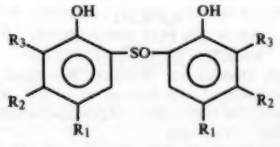
4,275,240

PROCESS FOR THE PREPARATION OF 2,2'-BISPHENOL SULFOXIDES

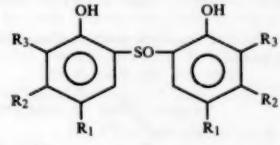
Akihiro Yamaguchi, Yokohama; Keizaburo Yamaguchi, Kawasaki; Hisamichi Murakami, and Tadashi Kobayashi, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,980
Int. Cl.[3] G07C *147/14*
U.S. Cl. 568—37 9 Claims

1. A process for the preparation of 2,2'-bisphenol sulfoxides represented by the formula



where R_1, R_2 and R_3 are selected from a hydrogen atom, a halogen atom, an alkyl group having 1 to 9 carbon atoms, a cycloalkyl group, a phenyl group, a hydroxy group, an aralkyl group having 7 to 9 carbon atoms, an alkoxy group, an allyloxy group, a carboxyl group and a carboalkoxy group having 2 to 5 carbon atoms or R_1 and R_2 or R_2 and R_3 may form a benzene ring together with the bonding carbon atoms respectively, consisting essentially of oxidizing 2,2'-bisphenol sulfides represented by the formula



where R_1, R_2, and R_3 have the same meaning as defined above, with hydrogen peroxide in the presence of an organic solvent which does not form an organic peracid with hydrogen peroxide, said organic solvent being selected from aliphatic, alicyclic, and aromatic hydrocarbons, alcohols, ethers, ketones, esters, aprotic polar solvents, carbon disulfide, and mixtures thereof, thereby forming said 2,2'-bisphenol sulfoxides.

4,275,241
PROCESS FOR THE PREPARATION OF 3-PHENOXY-BENZALDEHYDES

Siegfried Böhm, Cologne; Alfons Klein, Duesseldorf, and Karlfried Wedemeyer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

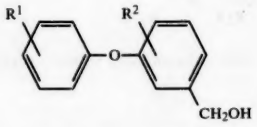
Filed Oct. 29, 1979, Ser. No. 89,010

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850180

Int. Cl.³ C07C *45/00, 45/29*

U.S. Cl. 568—426 **11 Claims**

1. A process for the preparation of a 3-phenoxy-benzaldehyde which comprises contacting the 3-phenoxy-benzyl alcohol of the formula



wherein R^1 and R^2 are identical or different and represent hydrogen or halogen with an aqueous solution of a dichromate in the presence of aqueous sulphuric acid at a temperature in the range of 50° to 125° C.

4,275,242
PROCESS FOR PREPARING 2-METHYLENEALDEHYDES

Jürgen Weber, Oberhausen; Wolfgang Bernhagen, Mülheim, and Helmut Springer, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 21, 1979, Ser. No. 106,314

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855505

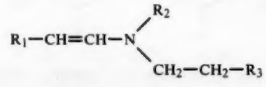
Int. Cl.³ C07C *47/21, 47/228*

U.S. Cl. 568—463 **3 Claims**

1. In a process for preparing 2-methylenealdehydes by reacting aldehydes with formaldehyde in a molar ratio of 1:1 at temperatures of 60° to 120° C., the improvement wherein

A. an aldehyde of the general formula $R_1—CH_2—CHO$ wherein R_1 is hydrogen or an unsubstituted or substituted aliphatic radical with up to 12 carbon atoms, a cycloaliphatic or an aromatic radical, is reacted with formaldehyde

B. in the presence of a catalytic amount of an enamine of the general formula



wherein R_1 has the above meaning and R_2 denotes an alkyl radical with up to 13 carbon atoms or a cycloaliphatic radical with 5 or 6 carbon atoms, and R_3 denotes hydrogen, an alkyl radical with up to 11 carbon atoms or a cycloaliphatic radical with 5 or 6 carbon atoms.

4,275,243
PROCESS FOR PRODUCING HYDROXYBUTYRALDEHYDE

Toshihiro Saito; Shoji Arai, and Yukihiro Tsutsumi, all of Shinnanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed Aug. 27, 1979, Ser. No. 69,850

Claims priority, application Japan, Sep. 29, 1978, 53-119123

Int. Cl.³ C07C *47/19*

U.S. Cl. 568—496 **6 Claims**

1. In a process for producing hydroxybutyraldehyde by reacting allyl alcohol with carbon monoxide and hydrogen in a reaction medium in the presence of a rhodium complex catalyst having an organic tri-substituted phosphine, the improvement wherein the organic tri-substituted phosphine and the reaction medium have a boiling point higher than 200° C., the phosphine is used at a concentration of 5×10^{-4} to 0.3 mol. per 1 liter of the reaction medium in the hydroformylation and then a distillative separation of the reaction mixture is carried out in the absence of oxygen at a temperature of 20° C. to 80° C. under a reduced pressure to separate the reaction product from the solution of the rhodium complex in the reaction medium.

4,275,244
LINEAR POLYALKYLENE ETHER GLYCOLS OF HIGH MOLECULAR WEIGHT

Herbert Helfert, Frankenthal, Fed. Rep. of Germany, and Pauls Davis, Gibraltar, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 904,798, May 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 736,940, Oct. 29, 1976, abandoned. This application Jul. 13, 1979, Ser. No. 57,229

Int. Cl.³ C07C *43/11*

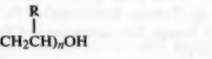
U.S. Cl. 568—624 **2 Claims**

1. A composition of matter of the structural formula:

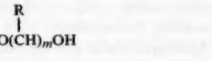
$$X—(Y—X)_n—Y—X$$

wherein X is the residue of a polypropylene ether glycol of linear character and of a molecular weight of up to about 2,000, upon removal of a terminal —OH group therein,

Y is the residue of an aliphatic or alkylaromatic diol upon removal of two —OH groups there from, having the generalized formula:



wherein n is an integer of from 1 to 3, or a poly(methylene glycol) having the generalized formula:



wherein m is an integer of from 2 to 6 and R is hydrogen, methyl, ethyl, phenyl or glycidol (—CH_2—O—R') in which R' is phenyl, butenyl, or mixtures thereof,

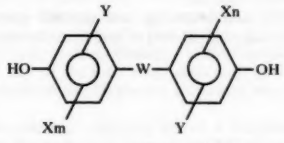
n is such that the molecular weight of the molecule is about 3,500 to about 100,000.

4,275,245
PROCESS FOR OBTAINING HALOGENATED DIPHENOLS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Division of Ser. No. 882,242, Feb. 28, 1978. This application Jul. 16, 1979, Ser. No. 58,000
Int. Cl.[3] C07C *39/16*
U.S. Cl. 568—726 8 Claims

1. A halogenated diphenol mixture having a significantly reduced quanity of trihalosubstituted and tetrahalo substituted diphenol, said mixture containing predetermined, statistical quantities of unreacted diphenol, monohalodiphenol and dihalodiphenol, said halogenated diphenol being represented by the general formula:



wherein Xm and Xn are chlorine, bromine and mixtures thereof with the proviso that either Xm or Xn is chlorine; Y is independently selected from the group consisting of C_1–C_4 alkyl and hydrogen; m and n are each 0–2 with the proviso the m+n equal at least 0.1, but no more than 2.0; and, W is a member selected from the following group;

(a) —CH_2— wherein r is an integer of 0–10 with the proviso that when both Xm and Xn are chlorine and m and n are each 1, r is 0 or 2–10;

(b)

wherein R is a member of the group consisting of C_1–C_{10} alkyl and C_6–C_{14} aryl; and,

(c)

wherein R and R′ can each independently be the same as R in (b) above.

4,275,246
SEPARATION OF PHENOLS

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jul. 2, 1979, Ser. No. 53,968
Int. Cl.[3] C07C *37/68, 37/70*
U.S. Cl. 568—750 9 Claims

1. A method for separating cresol from o-ethylphenol and/or 2,6-xylenol comprising treating the aforesaid phenols with an aqueous alkali metal carbonate or bicarbonate at elevated temperature in an amount and for a time sufficient to preferentially form the alkali metal salt of at least 50% of the cresol, but not so long as to form any appreciable amount of alkali metal salt of 2,6-xylenol or o-ethylphenol, separating the water soluble alkali metal salt of cresol from the water insoluble phenols, acidifying said alkali metal salt to "spring" the cresol and separating the cresol from the aqueous solution.

4,275,247
PROCESS FOR PREPARING AN ORGANIC COMPOUND

John F. Harris, Royston, England, assignor to Fisons Limited, London, England

Filed Dec. 27, 1979, Ser. No. 107,615
Claims priority, application United Kingdom, Dec. 27, 1978, 49996/78
Int. Cl.[3] C07C *37/06*
U.S. Cl. 568—767 25 Claims

1. A process for preparing pyrogallol or a salt thereof, which process comprises deoximating at −20° to 200° C. cyclohexane-1,2,3-trione oxime or an oxime ester thereof or a salt of either, and recovering pyrogallol or a salt thereof, and when the deoximation is effected by hydrolysis, the amount of water employed in the hydrolysis is 0.2–1000 parts by weight per part by weight of the oxime, oxime ester thereof or salt of either.

4,275,248
PREPARATION OF 2,4,6-TRIISOPROPYLPHENOL

Bruce E. Firth, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 51,607, Jun. 25, 1979, abandoned. This application Apr. 9, 1980, Ser. No. 138,818
Int. Cl.[3] C07C *37/11, 39/06*
U.S. Cl. 568—781 1 Claim

1. A process for the preparation of 2,4,6-triisopropylphenol which comprises reacting phenol with propylene at a temperature of from about 150° C. to about 250° C., at a pressure of from about 1 to about 250 atmospheres, and for a period of time from about 1 to about 20 hours in contact with a catalyst consisting essentially of fluorided alumina possessing from about 0.3 to about 5.0 wt. % fluoride to produce said 2,4,6-triisopropylphenol as the major product of said process, and recovering the resultant product.

4,275,249
PREPARATION OF 2,4-DI-T-ALKYLPHENOL

Bruce E. Firth, Arlington Hts., Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 30, 1979, Ser. No. 99,221
Int. Cl.[3] C07C *37/11*
U.S. Cl. 568—789 1 Claim

1. A process for producing 2,4di-t-butylphenol which comprises reacting phenol and isobutylene at a temperature of from about 150° C. to about 250° C., at a pressure of from about 1 to about 250 atmospheres, and for a period of time of from about 1 to about 20 hours in contact with a catalyst consisting essentially of alumina containing from about 0.3% to about 5.0% fluoride or chloride ion to produce said 2,4-di-t-butylphenol the major product of the process, and recovering the resultant product.

4,275,250
FLUOROBENZYL ALCOHOLS

Klaus Naumann, Cologne; Wolfgang Behrenz, Overath; Ingeborg Hammann, Cologne; Erich Klauke, Odenthal, and Albrecht Marhold, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 844,852, Oct. 25, 1977. This application Jun. 6, 1979, Ser. No. 46,149
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658074; Mar. 30, 1977, 2714042
Int. Cl.[3] C07C *33/46*
U.S. Cl. 568—812 2 Claims

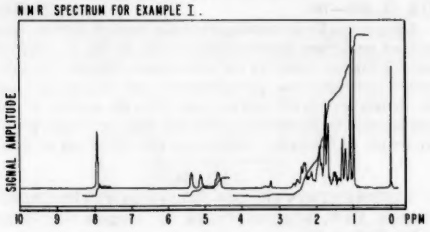
1. A fluorobenzyl alcohol selected from the group consisting of

2,3,5,6-tetra-fluorobenzyl alcohol,
tetrafluoro-3-chlorobenzyl alcohol,
trifluoro-3,5-dichlorobenzyl alcohol,
2,6-difluoro-3,5-dichlorobenzyl alcohol, and
2,3,6-trifluoro-5-chlorobenzyl alcohol.

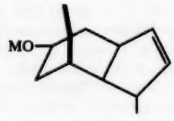
4,275,251
SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 29, 1980, Ser. No. 144,898
Int. Cl.³ C07C *35/22*
U.S. Cl. 568—817 2 Claims



1. An organometallic compound defined according to the structure:



wherein M is selected from the group consisting of sodium, potassium and lithium.

4,275,252
OXO ALCOHOL SYNTHESIS WITH RHODIUM CATALYST RECYCLE

Tamotsu Imai, Mt. Prospect; Edwin H. Homeier, Maywood, and David E. Mackowiak, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 28, 1980, Ser. No. 125,729
Int. Cl.³ C07C *27/22*
U.S. Cl. 568—909 15 Claims

1. A process for the synthesis of an alcohol which comprises the steps of:

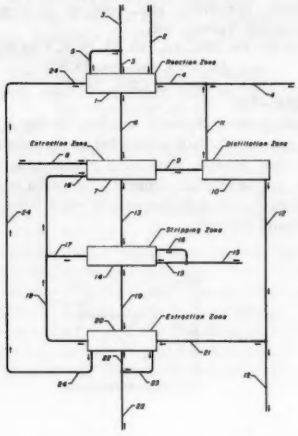
(a) treating an olefinic hydrocarbon having at least 3 carbon atoms with carbon monoxide and hydrogen in a hydroformylation zone at hydroformylation reaction conditions in the presence of a rhodium complex catalyst and amine modifier to form an alcohol;

(b) extracting said rhodium complex catalyst from the resulting alcohol by treatment with an aqueous ammonium hydroxide solution at treating conditions to obtain an organic phase comprising the product alcohol and amine modifier and an aqueous ammonium hydroxide solution phase containing said rhodium complex catalyst and thereafter separating the phases;

(c) stripping ammonia from said aqueous ammonium hydroxide solution containing said rhodium complex catalyst by treatment with a stripping agent at stripping conditions;

(d) recovering a major portion of said alcohol from the organic phase after removing the amine modifier therefrom; and

(e) extracting said rhodium complex catalyst from said aqueous ammonium hydroxide solution at extraction conditions using the remaining portion of said alcohol as the



extractant, and recycling said alcohol containing said rhodium complex catalyst to said hydroformylation zone.

4,275,253
RADIATION RESISTANT OIL AND METHOD OF LUBRICATING FOR ATOMIC POWER FACILITIES

Masaaki Takahashi, and Akira Ito, both of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nohonbashi, Japan

Continuation-in-part of Ser. No. 760,246, Jan. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 454,663, Mar. 25, 1974, abandoned. This application Oct. 10, 1978, Ser. No. 949,617
Claims priority, application Japan, Mar. 29, 1973, 48/35028
Int. Cl.³ C07C *2/00, 13/28, 15/24*
U.S. Cl. 585—7 3 Claims

1. A radiation resistant working oil suitable for use as a lubricant or medium for parts of atomic power facilities and nuclear reactors which are exposed to strong radiation, consisting essentially of a mixture of alpha-benzyl substituted methylnaphthalene isomers and beta-benzyl substituted methylnaphthalene isomers at a weight ratio of said alpha-benzyl methylnaphthalene isomers to said beta-benzyl methylnaphthalene isomers of from 50:50 to 95:5, said mixture being prepared by condensing alpha- and beta-methylnaphthalenes with benzyl chloride in the presence of Friedel Crafts' catalyst.

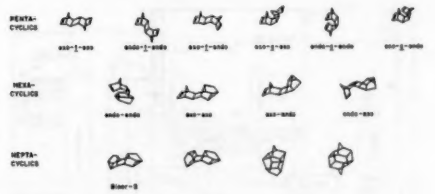
2. A method of lubricating parts of atomic power facilities and nuclear reactors which are exposed to strong radiation comprising applying to said parts a substance consisting essentially of a mixture of alpha-benzyl substituted methylnaphthalene isomers and beta-benzyl substituted methylnaphthalene isomers at a weight ratio of said alpha-benzyl substituted methylnaphthalene isomers to beta-benzyl substituted methylnaphthalene isomers of from 50:50 to 95:5, said mixture being prepared by condensing alpha- and beta-methylnaphthalenes with benzyl chloride in the presence of Friedel Crafts' catalyst.

4,275,254
DIMERIZATION OF NORBORNADIENE TO A MIXTURE OF EXO-ENDO AND ENDO-ENDO HEXACYCLIC DIMERS

Abraham Schneider, Overbrook Hills; Harry K. Myers, Jr., Aston, and George Suld, Springfield, all of Pa., assignors to Suntech, Inc., St. Davids, Pa.

Filed Dec. 11, 1975, Ser. No. 639,742
Int. Cl.³ C10L *1/04*
U.S. Cl. 585—14 **11 Claims**

THEORETICALLY POSSIBLE DIMERS OF NORBORNADIENE



1. A process for dimerizing norbornadiene comprising:

(a) contacting a feed consisting essentially of norbornadiene in the presence of an effective amount of a two-component catalytic system consisting of rhodium acetylacetonate and one of the following: diethylaluminum chloride, ethylaluminum dichloride and aluminum ethylsesquichloride;

(b) said contacting occurring within a temperature range between from about 0° C. to about 200° C.; and

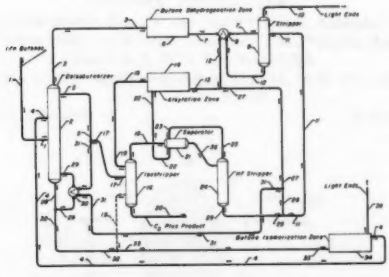
whereby a major product is an exo-endo form of a hexacyclic dimer or norbornadiene and two coproducts are an endo-endo form of a hexacyclic dimer of norbornadiene and a trimer of norbornadiene.

6. A composition consisting essentially of sufficient amounts of saturated exo-endo hexacyclic dimer of NBD and saturated endo-endo hexacyclic dimer of NBD wherein the composition has a melting point of its last crystal low enough to permit use of the composition as a high energy fuel.

4,275,255
CONVERSION OF MIXED BUTANES INTO GASOLINE

Bipin V. Vora, Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 16, 1980, Ser. No. 112,484
Int. Cl.³ C07C *2/58*
U.S. Cl. 585—315 **8 Claims**



1. A hydrocarbon conversion process which comprises the steps of:

(a) passing a feed stream which comprises a mixture of normal butane and isobutane into a deisobutanizer column operated at effective fractionation conditions;

(b) withdrawing a first process stream, which is rich in normal butane, from the deisobutanizer column and passing the first process stream into a butane isomerization zone operated at isomerization conditions and thereby effecting the production of a butane isomerization zone effluent stream which comprises isobutane and normal butane;

(c) passing the butane isomerization zone effluent stream into the deisobutanizer column;

(d) withdrawing a second process stream, which is rich in isobutane, from the deisobutanizer column and passing the second process stream into a butane dehydrogenation zone operated at butane dehydrogenation conditions and thereby effecting the formation of a butane dehydrogenation zone effluent stream which comprises isobutane, isobutylene, normal butane and normal butenes;

(e) heating the butane dehydrogenation zone effluent stream by indirect heat exchange against a stripper bottoms stream, and then passing the butane dehydrogenation zone effluent stream into a stripping column operated at effective fractionation conditions and thereby producing an overhead stream comprising propane and which is removed from the process and said stripper bottoms stream which comprises isobutane, isobutylene, normal butane and normal butenes;

(f) cooling the stripper bottoms stream by indirect heat exchange against the butane dehydrogenation zone effluent stream, and passing the stripper bottoms stream into an alkylation zone operated at alkylation-promoting conditions and in which HF is utilized as a catalyst and thereby producing an alkylation zone effluent stream which comprises normal butane, isobutane and C_8 branched-chain hydrocarbons;

(g) passing the alkylation zone effluent stream into an isostripper column operated at effective fractionation conditions and thereby producing an isostripper overhead stream comprising HF, isobutane and propane, an isostripper sidecut stream rich in isobutane and a net isostripper bottoms stream comprising C_8 branched-chain hydrocarbons, and withdrawing the isostripper bottoms stream from the process as a product stream;

(h) passing a first portion of the isostripper sidecut stream into the deisobutanizer column, utilizing a second portion of the isostripper sidecut stream to reboil the deisobutanizer column and then passing the second portion of the isostripper sidecut stream into the alkylation zone;

(i) condensing the isostripper overhead stream and passing substantially all of the hydrocarbons originally present in the isostripper overhead stream into an HF stripping column operated at conditions effective to separate the material charged to the column into an HF stripping column overhead stream comprising HF and a net HF stripping column bottoms stream comprising propane and isobutane; and,

(j) passing a first portion of the HF stripping column bottoms stream into the stripping column of step (e) and passing a second portion of the HF stripping column bottoms stream into the alkylation zone.

4,275,256
SHAPE SELECTIVE REACTIONS WITH GROUP VIIA METAL MODIFIED ZEOLITE CATALYSTS

Chin-Chiun Chu, North Brunswick, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,408
Int. Cl.³ C07C *3/52, 3/62*; B01J *29/36*
U.S. Cl. 585—467 **20 Claims**

1. A process for conversion of aromatic hydrocarbon compounds, said process comprising contacting said aromatic hydrocarbon compounds with a crystalline zeolite catalyst at a temperature of between about 250° C. and about 750° C. and a pressure within the approximate range of $10^5 N/m^2$ to $10^7 N/m^2$, said zeolite being characterized by a silica to alumina

mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said zeolite having undergone prior modification by treatment with one or more compounds containing elements of Group VII A to deposit thereon at least 0.25 weight percent of such element.

12. The process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10** or **11** wherein said conversion comprises the alkylation of an aromatic compound by contacting said compound with an alkylating agent to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

15. The process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10** or **11** wherein said conversion comprises the transalkylation of aromatic compounds to produce dialkylbenzene compounds wherein the 1,4-dialkylbenzene isomer is present in excess of its normal equilibrium concentration.

18. The process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10** or **11** wherein said conversion comprises disproportionation of alkylbenzenes to produce benzene and dialkylbenzenes in which the proportion of 1,4-dialkylbenzene isomer is in excess of its normal equilibrium concentration.

4,275,257

ISOMERIZATION OF HYDROCARBON FEED

Thomas Hutson, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

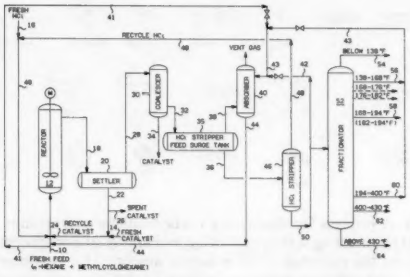
Filed Jan. 31, 1980, Ser. No. 117,131

Int. Cl.[3] **C07C** *5/13*

U.S. Cl. 585—738 **39 Claims**

1. In an isomerization process for isomerizing a hydrocarbon feed, including; isomerizing said hydrocarbon feed, in an isomerization reaction step, in the presence of a metal halide catalyst and a hydrogen halide; separating the reaction effluent from said isomerization reaction step, in a first separation step, into a first liquid phase and an uncondensed first vapor phase, containing a significant amount of said hydrogen halide and noncondensable hydrocarbon gases; further separating the thus separated first liquid phase, in a second separation step, into a second liquid phase and an uncondensed second vapor phase, containing a major portion of said hydrogen halide; recycling the thus separated second vapor phase, in a first recycling step, to said isomerization reaction step; fractionating at least a portion of said second liquid phase, in at least one fractionation step, to produce a plurality of liquid fractions; and at least intervally removing at least a portion of the thus separated first vapor phase from said isomerization process, in a vapor phase removal step, to reduce the buildup of said noncondensible hydrocarbon gases in said isomerization process, the improvement comprising:

(a) contacting said uncondensed first vapor phase, in an absorption step subsequent to and separate from said first separation step, with an absorption liquid selected from the group consisting of a portion of said hydrocarbon feed, a portion of said second liquid phase, at least one of said plurality of fractions and mixtures thereof, to absorb



at least a portion of the hydrogen halide contained in said uncondensed first vapor phase and produce a third liquid phase containing a major portion of said absorption liquid and the thus absorbed at least a portion of the hydrogen halide contained in said uncondensed first vapor phase and an uncondensed third vapor phase containing a major portion of said noncondensable hydrocarbon gases;

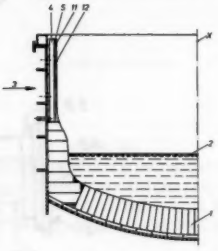
(b) recycling said third liquid phase to said isomerization reaction step, in a second recycling step; and

(c) at least intervally removing said uncondensed third vapor phase from said isomerization process, in said vapor phase removal step.

4,275,258
WATER-COOLED BOX DESIGNED AS WALL ELEMENT FOR A MELTING FURNACE

Lothar Harmsen, Lingen; Klaus Bick, Paderborn; Wilhelm Lachenmayer, Detmold; Friedhelm Vennmann, and Jürgen Zieschang, both of Lingen, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,334
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825536
Int. Cl.³ F27D *1/12*
U.S. Cl. 13—32 13 Claims

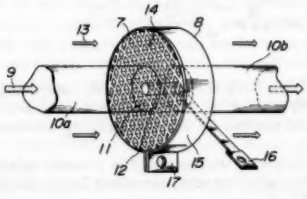


1. A box-shaped shallow, water-cooled wall element of steel plate for the construction of a wall portion of a melting furnace, especially an arc furnace, above the bath of the melt in the furnace, comprising, a front wall adapted to face the interior of the furnace and being curved according to the curvature of the latter, a rear wall spaced from and substantially parallel to said front wall, a pair of short side walls connecting lateral edges of said front and rear wall to each other, a top and a bottom wall respectively connecting the top and bottom edges of said front and rear wall to each other, a cooling water inlet, a cooling water outlet, and at least one guide vane in the interior of the wall element for guiding the cooling water between inlet and outlet, said front wall being provided over the whole outer surface thereof adapted to face the interior of the furnace with recesses to facilitate adhesion of a layer of refractory material to be applied thereto and adhesion of slag splattered thereagainst during operation of said furnace, wherein the area of said recesses at said outer surface is smaller than the area of the remaining steel plate at said surface to thus enhance heat conduction from the interior of the furnace to the cooling water passing through the wall element and to prevent damage of said front wall when the protective layer of refractory material is missing completely or in part.

4,275,259
THERMAL CONVERTER

Noboru Yamamoto, Nagoya, and Akira Ohmura, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Oct. 5, 1979, Ser. No. 82,239
Claims priority, application Japan, Oct. 14, 1978, 53/126423
Int. Cl.³ H01L *35/28*
U.S. Cl. 136—209 3 Claims

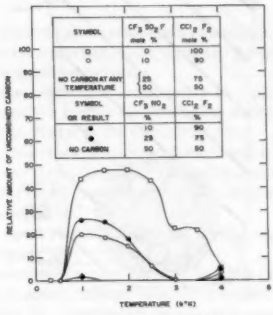


1. A thermal converter in which a thermoelectric element is a honeycomb structural body having a large number of parallel channels extending therethrough and separated by thin walls, a part of the parallel channels forms a region for flowing a high temperature fluid and the other part of the parallel channels forms a region for flowing a low temperature fluid.

4,275,260
DIELECTRIC GAS MIXTURE CONTAINING TRIFLUORONITROMETHANE AND/OR TRIFLUOROMETHANESULFONYL FLUORIDE

Roy E. Wootton, Murrysville, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 4, 1979, Ser. No. 72,344
Int. Cl.³ H01B *3/56*
U.S. Cl. 174—17 GF 18 Claims

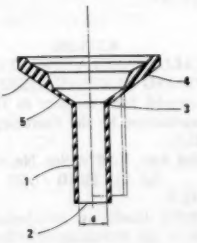


1. A dielectric gas mixture comprising a halogenated hydrocarbon gas subject to carbonization in the presence of an electrical discharge and a carbonizing-suppressant gas selected from the group consisting of CF_3NO_2, CF_3SO_2F, and mixtures thereof.

4,275,261
END PIECE FOR HIGH VOLTAGE CABLES

Jean Fillie, Lagny sur Marne, France, assignor to Trefimetaux, Clichy, France

Filed Jan. 3, 1979, Ser. No. 753
Claims priority, application France, Jan. 11, 1978, 78 01287; Nov. 21, 1978, 78 33367
Int. Cl.³ H02G *15/064*
U.S. Cl. 174—73 R 5 Claims



1. A molded elastomer insulator for protecting the end of high voltage electric cables of a diameter of up to twice the diameter of said insulator, said insulator being of elongated cylindrical shape and having an open end, the other end being open and terminating in a flared conical portion, the included angle of the interior of the conical portion being between 100° and 110°, said insulator containing by weight from 100 to 200

parts of hydrated alumina per 100 parts of elastomer, said insulator being stretchable to accommodate and receive said cable.

4,275,262

SUBMARINE CABLE

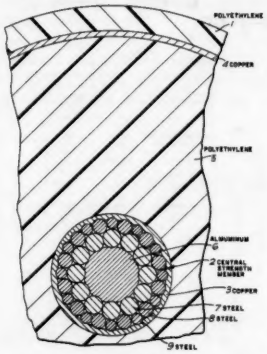
Albert E. Sellars, Southampton, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 25, 1976, Ser. No. 670,136

Claims priority, application United Kingdom, Dec. 4, 1975, 49824/75

Int. Cl.³ H01B *5/10*

U.S. Cl. 174—128 R **5 Claims**



1. A submarine cable comprising:

a water impervious sheath containing a central strength member, a radially inner tubular copper conductor surrounding the strength member, and a radially outer tubular conductor separated from the inner conductor by insulating material;

said central strength member comprising a central aluminum core surrounded by a plurality of strain members;

said strain members comprising first and second layers of steel wires, said first layer being contiguous with said aluminum core and said second layer surrounding and contiguous with said first layer, said wires of said second layer being of smaller diameter than that of the wires of said first layer;

said second layer comprising wires of two different sizes laid adjacent to one another and alternately large and small proceeding circumferentially around the cable axis; and

said aluminum core having a diameter at least twice that of any of said wires.

4,275,263

ELECTRICALLY INSULATING STRUCTURALLY STRONG BUSHING ASSEMBLY

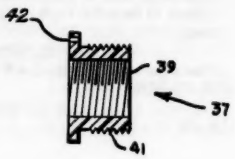
John J. Chino, Arnold, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

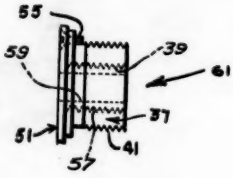
Filed Aug. 3, 1979, Ser. No. 63,510

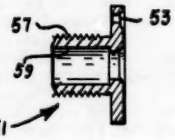
Int. Cl.³ H01B *17/26*

U.S. Cl. 174—152 R **1 Claim**

1. An electrically insulating structurally strong bushing assembly for use at the mounting interface of an electronic chassis on a rack, comprising an epoxy-glass bushing having a tapped inner hole through the longitudinal center thereof and a threaded outer surface, said epoxy-glass bushing being fabricated of plate stock with the grain running perpendicular to the structural load to effectively double the allowable bearing load over conventional epoxy-glass, a steel insert having a head portion and threads on the outer surface thereof for engagement with the threads on the tapped inner hole of said bushing, said steel insert having a longitudinal hole through the center thereof for receiving a rack pin therein, and means for locking said steel insert to said epoxy-glass bushing after the insert has been screwed into the bushing including a flat head screw passing through a clearance hole in the head portion of







said steel insert and threadably engaging an aligned threaded hole in said epoxy-glass bushing, said flat head screw being fabricated of nylon, thereby allowing the assembled bushing and insert to be threadably attached to an electronic chassis for receiving a rack pin when the chassis is mounted in a rack.

4,275,264

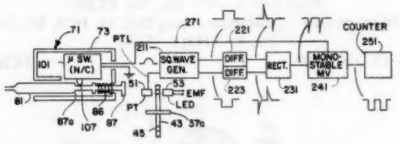
PORTABLE HAND-HELD LENGTH PROBE WITH TRACING-UNIT-ACTUATED LENGTH SIGNAL OUTPUT CONTROL SWITCH

David J. Houck, Monkton, Md., assignor to Electronic Modules Corporation, Timonium, Md.

Filed Aug. 2, 1979, Ser. No. 62,942

Int. Cl.³ G08C *21/00*; G08B *5/22*; G01B *3/12*

U.S. Cl. 178—18 **9 Claims**



1. A portable hand-held length probe, comprising

a portable hand-held body with a nose wheel rotatably mounted thereon for length measuring movement over a surface,

a movable tracing unit mounted in movable relationship on said body adjacent said nose wheel for movement relative to said body,

spring means resiliently biasing said tracing unit to a first normal quiescent position, and said tracing unit being

movable to a second position as a function of pressing said unit against a surface during tracing action therewith on a surface and in conjunction with rotational measuring movement of said wheel,

signal means for effecting a length measurement indicative signal as a function of rotational movement of said wheel,

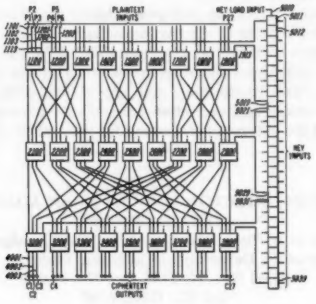
and switch means carried by said body and responsive to movement of said tracing unit to said second position to enable passage of a said signal from said signal means, and said switch means being responsive to movement of said tracing unit to said first normal position to effect disablement of effective passage of said signal means signal.

4,275,265

COMPLETE SUBSTITUTION PERMUTATION ENCIPHERING AND DECIPHERING CIRCUIT

George I. Davida, Bethesda, Md., and John B. Kam, New York, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 2, 1978, Ser. No. 947,428
Int. Cl.³ H04L *9/00*
U.S. Cl. 178—22.09 **12 Claims**



1. A circuit for translating binary plaintext information into binary ciphertext information corresponding thereto comprising:

a certain number of binary data inputs;

a corresponding number of binary data outputs;

a certain number of complete data translation circuits each comprising: a certain number of binary data inputs k to said complete data translation circuit, a certain number of binary data outputs k from said complete data translation circuit, and means for translating each possible input signal present on said binary data inputs to said complete data translation circuit into one and only one output signal present on said binary data outputs from said complete data translation circuit such that for every possible pair of numbers i and j where both i and j are between one and k there exist at least two input signal combinations and two corresponding output signal combinations such that the two input signal combinations differ from each other only in the i th bit and the two corresponding output signal combinations differ from each other in at least the j th bit; and

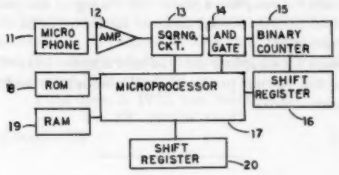
a plurality of connections between said binary data inputs, said binary data outputs and said complete data translation circuits such that each of said binary data outputs is dependent on all of said binary data inputs.

4,275,266

DEVICE TO CONTROL MACHINES BY VOICE

Theodore Lasar, 40 First Ave., New York, N.Y. 10009

Filed Mar. 26, 1979, Ser. No. 23,638
Int. Cl.³ H04M *1/19*
U.S. Cl. 179—1 VC **10 Claims**



1. A voice control system responsive to a sequence of predetermined different audio frequency signals to generate a digital control output signal comprising:

(a) audio conversion means responsive to a predetermined audio frequency signal for generating a digital number signal proportional to the audio frequency;

(b) storage means for storing predetermined program data and also for temporarily storing data including each of a sequence of digital number signals generated by said audio conversion means;

(c) output signal memory means for storing digital control output signals; and

(d) data processing means coupled to each of said audio conversion means, storage means and output signal memory means for transferring signals and controlling the system in response to said predetermined program data stored in said storage means, said predetermined program data including

(1) a ratio generation routine for generating a sequence of ratio number signals by dividing each of the stored sequence of digital number signals by one of the digital number signals, and

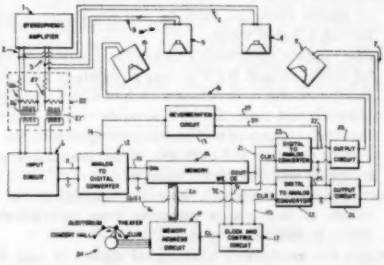
(2) a ratio number conversion routine for converting a sequence of stored ratio number signals into a digital control output signal for storage in said output signal memory means.

4,275,267

AMBIENCE PROCESSOR

Stephen L. Kurtin, Sherman Oaks, and Edward C. Kelm, Pasadena, both of Calif., assignors to Koss Corporation, Milwaukee, Wis.

Filed May 30, 1979, Ser. No. 43,716
Int. Cl.³ H04R *3/00*
U.S. Cl. 179—1 J **11 Claims**

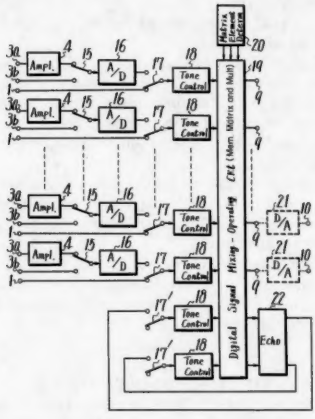


9. A signal processor which comprises:

(a) means for combining the signals of a multi-channel audio system whereby a monaural signal is formed;

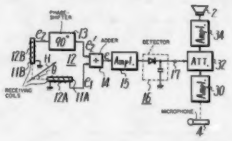
(b) signal delay means providing signals delayed by first and second predetermined amounts;
(c) means for coupling said monaural signal to the input of said delay means;
(d) means for coupling a portion of the signal delayed by said first predetermined amount to the input of said delay means;
(e) means for coupling a portion of the signal delayed by said second predetermined amount to the input of said delay means; and
(f) means for coupling each of said signals delayed by said first and second predetermined amounts to audio reproducers.

4,275,268
MIXING APPARATUS
Hiroshi Takahashi, Chiba; Etsuo Shibazaki, Musashino, and Yoshihito Yamamoto, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 17, 1979, Ser. No. 58,316
Claims priority, application Japan, Jul. 20, 1978, 53-88547
Int. Cl.³ H04M *3/56*
U.S. Cl. 179—1 B **11 Claims**



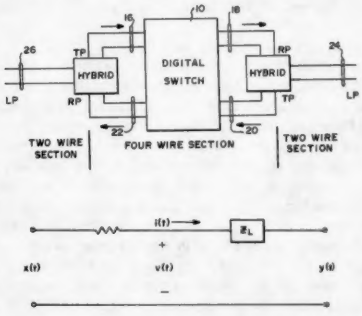
1. Apparatus for mixing digital signals in S input channels to obtain digital mixed signals in T output channels, where S and T are both integers, said apparatus comprising:
memory means for storing a matrix of S columns by T rows of matrix elements, each of said S×T matrix elements having a digital value;
matrix element determining means for determining the digital values of said S×T matrix elements in response to a desired mixing ratio between each of said S separate input channels and each of said T separate output channels, so that each column of said matrix corresponds to one of said S input channels and each row of said matrix corresponds to one of said T output channels;
matrix element supplying means for supplying said digital values of said matrix elements from said determining means to said memory means; and
means for multiplying said digital signals in said S input channels by said matrix elements from said memory means, means for accumulating the multiplied signals, and means for latching the accumulated signals to obtain said T channels of digital output signals.

4,275,269
PUBLIC ADDRESS SYSTEM
Junkichi Sugita, Yokohama, and Yuzo Fuse, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 24, 1979, Ser. No. 60,036
Claims priority, application Japan, Jul. 27, 1978, 53-92008
Int. Cl.³ H04R *3/02*
U.S. Cl. 179—1 FS **3 Claims**



1. In a public address system having a movable microphone, a speaker system spaced from said microphone for converting an input from the microhone into a sound, a separate transmitting coil in the microphone, a receiving device in the speaker system for receiving a signal emitted from the transmitting coil, and an attenuation means post-connected to said receiving device for varying the level of a signal applied to a speaker of the speaker system in direct proportion to the magnitude of the signal from said receiving device, the receiving device comprising
(a) two receiving coils disposed perpendicular to each other;
(b) means for phase-shifting a signal obtained from one of the two receiving coils;
(c) means for adding said phase-shifted signal and a signal from the other of the two receiving coils and
(d) means for detecting the magnitude of the added signal whereby said added signal increases in magnitude as said microphone and transmitting coil are moved closer to said speaker system and said attenuation means correspondingly decreases the volume of said sound for prevention of howling.

4,275,270
SPEECH DETECTOR FOR USE IN AN ADAPTIVE HYBRID CIRCUIT
Alejandro de la Plaza, Mountain View, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Nov. 29, 1979, Ser. No. 98,623
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **8 Claims**



6. In a hybrid circuit having a near end talker and a far end talker, a speech detector comprising means for generating a first control signal representing the instantaneous sign of the power flow in said hybrid circuit, and means responsive to said first control signal for generating a second control signal hav-

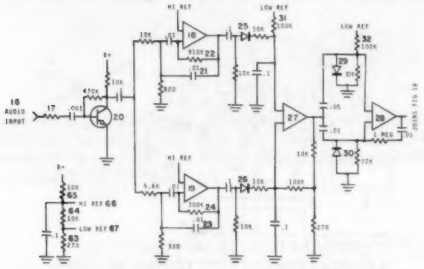
ing a first state representing the presence of said near end talker in said hybrid circuit and having a second state representing the absence of said near end talker in said hybrid circuit.

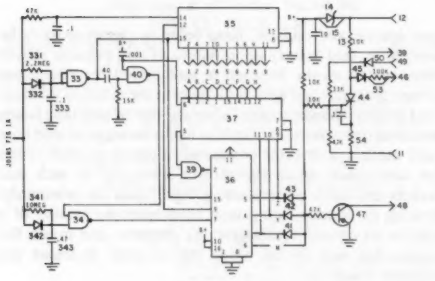
4,275,271

SUB-MINIATURE RADIO TELEPHONE DECODER

Charles Soulliard, Tucson, Ariz., assignor to Midian Electronics, Inc., Tucson, Ariz.

Filed Jun. 8, 1979, Ser. No. 47,588
Int. Cl.³ H04Q *7/04*
U.S. Cl. 179—2 EB **15 Claims**





1. A radio telephone tone decoder, comprising:

a first active filter means responsive to an audio input for passing a tone signal of a first frequency;

a second active filter means responsive to an audio input for passing a tone signal of a second frequency;

a first detector means for rectifying the output of said first active filter;

a second detector means for rectifying the output of said second active filter;

a first operational amplifier means responsive to outputs from said first and second detectors for producing a first and second voltage level output indicative of which of said first and second detectors is providing the input to said first operational amplifier;

a second operational amplifier means driven by the output of said first operational amplifier for producing a voltage pulse each time its input transitions between said first and second voltage levels;

a first counter means incremented by output pulses from said second operational amplifier;

an interdigit timer means responsive to said output pulses of said second operational amplifier for resetting said first counter at single digit determining intervals;

a second counter means incremented by output pulses from said first counter; a decoder responsive to the count in said first and second counters;

a time out timer means responsive to output pulses from said second operational amplifier and said decoder for clearing said second counter when a proper code has not been decoded within a predetermined time; and

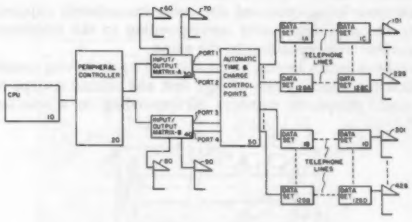
a third counter means incremented by pulses from said interdigit timer and decoder for stepping said decoder through a series of digits.

4,275,272

REMOTE TIME AND CHARGE SYSTEM

Michael F. Mennino, Jr., Glendale, Ariz., and Donald J. Coppin, Elmhurst, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 5, 1979, Ser. No. 92,409
Int. Cl.³ H04M *15/12*
U.S. Cl. 179—7.1 TP **9 Claims**



1. A remote time and charge system for use in conjunction with a telephone traffice service position system, said traffic service position system including a central processing unit and a peripheral controller connected to said central processing unit and operated to transmit data from said central processing unit to peripheral devices, said remote time and charge system comprising:

switching means connected to said peripheral controller via input ports and operated in response to signals transmitted from said peripheral controller to establish a connection from one of said plurality of input ports to one of a plurality of output ports for the transmission of data;

data receiving means connected to a particular one of said output ports of said switching means and operated in response to said connection of a particular one of said input ports through said switching means via a particular one of said output ports to said data receiving means to receive data transmitted from said central processing unit;

a plurality of data transmission means, each connected to a particular output port of said switching means and operated in response to connection of said switching means to transmit data to a particular remote location;

a first plurality of data terminals, each connected to a corresponding one of said plurality of data transmission means whereby data is transmitted from said central processing unit to each of said first plurality of data terminals and simultaneously data is transmitted from said central processing unit to said data receiving means, said transmitted data representing time and charge information relative to particular telephone calls placed at each of said remote locations.

4,275,273

TELEPHONE INDEX FOR REPERTORY DIALER

Si-Ling Ts'Ao, 39-1 Alley 30, Lane 172, Section I, Keelung Rd., Taipei, Taiwan

Filed Feb. 8, 1979, Ser. No. 10,375
Int. Cl.³ H04M *1/274*
U.S. Cl. 179—90 B **9 Claims**

1. Apparatus for indexing the repertory buttons of a telephone repertory dialer comprising:

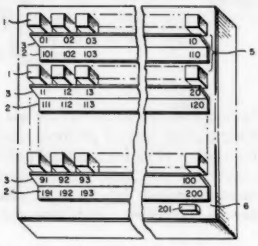
a plurality of telephone number selection buttons arranged in rows and columns,

means for storing first and second groups of a plurality of telephone numbers, one number of each group of said plurality of telephone numbers corresponding to a particular selection button,

means for displaying first and second groups of names corresponding to each group of stored numbers, each display means having a plurality of names, each name of a group corresponding to one number stored in a corresponding group of stored telephone numbers, said display means comprising a plurality of first and second strips having names written thereon, said first and second strips being oriented at substantially right angles with respect to each other along their lengths, said first and second strips adapted to fit between the rows of said selection buttons, the names of each of said first and second strips being arranged so that each name on a strip is aligned with a column formed by said buttons,

each name being observed also being immediately adjacent to the selection button corresponding to the telephone number corresponding to the name,

switching means having a first and second switching condition for selecting one of said first and second groups of stored telephone numbers corresponding to a selected



strip, said switching means comprising a manually operable switch to selectively connect said number selection buttons to said first group of telephone numbers in response to said first switching condition and to said second group of telephone numbers in response to said second switching condition,

the telephone number provided by said number storing means whose said switching means is in said first switching condition corresponding to the telephone number of the name immediately adjacent thereto on said plurality of first strips, and the telephone number provided by said storing means whose said switching means is in said second switching condition corresponding to the telephone number of the name immediately adjacent thereto on said plurality of second strips,

means for automatically dialing the stored telephone number in each group of stored numbers corresponding to a name of a selected one of said first and second group of names in response to the activation of a number selection button immediately adjacent to and associated with said name,

whereby the actuation of a number selection button will cause the telephone number corresponding to said switch condition and to said immediately adjacent name to be dialed.

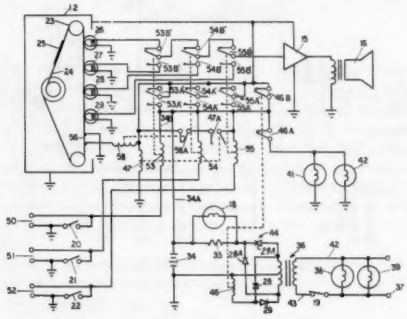
4,275,274

AUDIO VISUAL MONITORING SYSTEM FOR ANNOUNCING A MESSAGE UPON DETECTION OF A MONITORED CONDITION

Tim G. English, 15 Valley Rd., R.D. 1, West Redding, Conn. 06896

Filed May 29, 1979, Ser. No. 43,151
Int. Cl.³ G11B *15/02, 31/00*
U.S. Cl. 369—22 **4 Claims**

1. An audio-visual communicating system for monitoring and announcing a warning upon the detection of a predetermined monitored condition comprising a sign means, an AC lamp and a DC lamp for illuminating said sign, a tape transport means having an endless tape containing a plurality of recorded messages, a plurality of tape heads operatively associated with said endless tape, a playback amplifier and associated speaker, an electrical circuit electrically connecting said tape heads to said playback amplifier and associated speaker and for selectively energizing said AC or DC lamps, said electrical circuit including a primary power source and a secondary power source, said secondary power source comprising a storage battery; a charging circuit included in said electrical circuit for maintaining a charge on said battery, and said AC lamp being in circuit so as to be energized by said primary



power source, and said DC lamp being in circuit so as to be energized by said battery upon failure of said primary power source, switch means disposed in said circuit for energizing said tape transport and said D.C. lamp in the event of a failure of said primary power source, whereby one of said tape heads is rendered operative to transmit an audio message on said tape to said speaker, a detector connected in circuit to each of the other tape heads, means operatively connected to each said detectors and with corresponding tape heads for selectively activating its corresponding tape head upon the sensing of a condition monitored by a respective detector, and means for de-energizing said circuit when the detector de-senses the monitored condition.

4,275,275

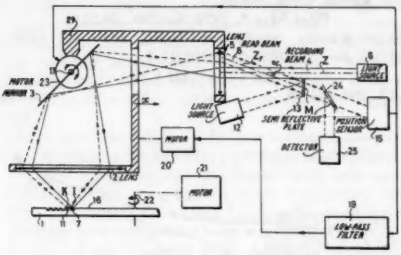
RECORDING DEVICE FOR OPTICALLY RECORDING INFORMATION ON A CARRIER WITH A LIGHT SPOT AND A POSITIONAL CONTROL OF THE SPOT

Claude Bricot, and Jean Claude Lehureau, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Continuation of Ser. No. 837,383, Sep. 27, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 1,006
Claims priority, application France, Oct. 1, 1976, 76 29609
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—44 **13 Claims**

2. A recording device for recording information onto a carrier surface having a rotation axis; said information being optically stored along a continuous spiral track of uniform pitch e, in a form immediately readable after recording; said device comprising: means for rotating said surface, first means for projecting onto said surface a recording spot optically modulated by said information, second means for projecting onto said surface an unmodulated reading spot producing a continuous illumination and separated from said recording spot by a radial spacing equal to n times the pitch e, n being an integer different from zero; said device further comprising: radial displacement means for radially displacing said spots in relation with said surface, and radial feedback control means responsive to the light emerging from the portion of said surface illuminated by said reading spot, said light being modu-

lated by information previously recorded by said recording spot, said radial feedback control means providing a first electrical signal for the tracking by said reading spot of one of said

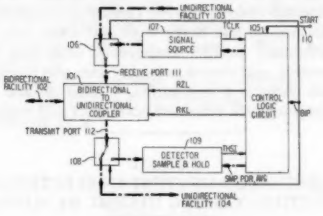


turns while said recording spot is recording said information along another one of said turns, said radial feedback control means further providing a second electric signal controlling said displacement means.

4,275,276
AUTOMATICALLY ADJUSTABLE BIDIRECTIONAL-TO-UNIDIRECTIONAL TRANSMISSION NETWORK

Joseph F. Rizzo, Lodi, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 6, 1979, Ser. No. 64,042
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 D **11 Claims**



1. A transmission network (FIG. 1, 101) having receive (111) and transmit (112) ports and at least a third port adapted to couple a bidirectional (2-wire) transmission facility (102) to receive (103) and transmit (104) unidirectional facilities (4-wire) including a controllably adjustable impedance network (FIG. 2, 202) in circuit with said receive (111), transmit (112) and third ports and responsive to control signals having a plurality of adjustable impedance elements (FIG. 4, RKL, RZL) for obtaining an optimum match to the impedance of the bidirectional facility (102), CHARACTERIZED BY,

a controllable source (107) of at least an individual tone signal having a predetermined frequency (for example 325 Hz), and of a test signal having a plurality of predetermined frequency components (for example components at 100 Hz spacing between 700 Hz and 3400 Hz),

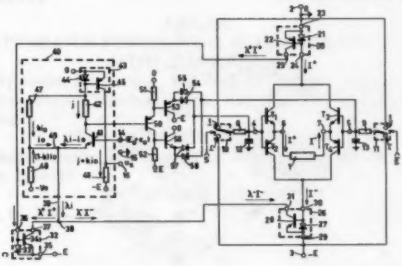
means (109) for detecting signal amplitude values at the transmit port (112) of the transmission network, and

means (105) for generating control signals to control supplying said test signal to the receive port (111) and to adjust a predetermined one of the impedance elements (for example RKL) for obtaining an average value amplitude null (detected via 109) at the transmit port (112), and to control supplying said individual tone signal (for example 325 Hz from 107) to the receiving port (111) and to control adjusting a predetermined one of the impedance elements (for example RZL) for obtaining an amplitude null (detected via 109) at the transmit port (112), so that transhybrid loss between the receive port (111) and transmit port (112) is maximized.

4,275,277
SUBSCRIBER LINE INTERFACE CIRCUIT FOR A TELEPHONE LINE

Gilbert M. M. Ferrieu, Bievres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,084
Claims priority, application France, Jun. 26, 1978, 78 18960; Sep. 28, 1978, 78 27762
Int. Cl.³ H04B *1/58*; H04Q *1/28*
U.S. Cl. 179—170 NC **8 Claims**

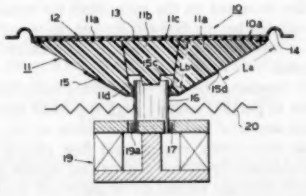


1. A subscriber line interface circuit for connecting a subscriber's telephone line to a telephone exchange, the interface circuit including two identical amplifiers, each having an output coupled to a respective wire of said telephone line and an input, said amplifiers further being coupled to a direct current supply source, characterized in that said interface circuit comprises means coupled to said amplifiers for forming a weighted sum current which is equal to the sum of the weighted current flowing to one of the wires of said telephone line and the weighted current flowing from the other of said wires, said weighting being in the form of substantially equal coefficients, means coupled to said current forming means and to said telephone exchange for transforming said weighted sum current into two voltages of opposite polarity, and means coupled to said transforming means for applying said voltages to the respective inputs of said amplifiers.

4,275,278
DIAPHRAGM FOR A LOUDSPEAKER

Sadaaki Sakurai, Yokohama; Mitsuru Takashima, and Masana Ugaji, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,222
Claims priority, application Japan, Aug. 18, 1978, 53-100003
Int. Cl.³ H04R *7/02, 9/02*
U.S. Cl. 179—181 F **16 Claims**



1. A diaphragm for a loudspeaker comprising:

a frustum-shaped core member having a front surface;

an outer radiation layer mounted on said front surface and having a high resonance sharpness; and

an intermediate layer interposed between said front surface and said outer radiation layer, and having a resonance sharpness lower than that of said outer radiation layer.

4,275,279

SWITCH ASSEMBLY HAVING PRINTED CIRCUIT ROTOR AND INTEGRALLY HINGED SPLIT HOUSING

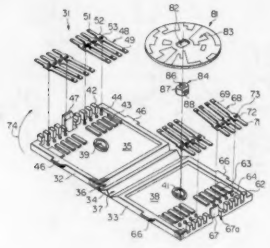
Tadashi Wagatsuma, and Kenji Hiwatashi, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1976, Ser. No. 751,361

Claims priority, application Japan, Dec. 19, 1975, 50-171425[U]; Jul. 23, 1976, 51-98181[U]

Int. Cl.³ H01H *9/00, 19/54*

U.S. Cl. 200—11 DA **13 Claims**



1. A switch assembly comprising:

a first electrically insulative housing member having a hole therethrough;

first means for retaining a plurality of contacts in spaced relation on said first housing member, said first retaining means including a plurality of first projections extending outwardly from an edge portion of said first housing member and spaced from one another;

a second electrically insulative housing member adapted to fit in parallel relation with said first housing member;

second means for retaining a plurality of contacts in spaced relation on said second housing member, said second retaining means including a plurality of second projections extending outwardly from an edge portion of said second housing member and spaced from one another, said second projections being offset from said first projections so as to interfit therewith;

a plurality of longitudinally extending first electrical contacts retained by said first retaining means, each of said first contacts lying between respective first projections with one of the second projections interfitting therebetween;

a plurality of longitudinally extending second electrical contacts retained by said second retaining means, each of said contacts lying between respective second projections with one of the first projections interfitting therebetween;

a rotor shaft rotatably extending through said hole;

a rotor disc mounted on the rotor shaft for rotation therewith, said disc having first and second electrically conductive patterns formed on opposite sides thereof, respectively; and

means for fastening the first and second housing members together in parallel relation with the rotor disc disposed between said first and second contacts so that said first contacts operatively engage said first pattern and said second contacts operative engage said second pattern, in which the first and second cover plates are configured to be complementary interfitting so as to substantially sealingly enclose the first and second contacts and the rotor disc.

4,275,280

BRAKE SWITCH ACTUATOR FOR AUTOBICYCLE OR THE LIKE

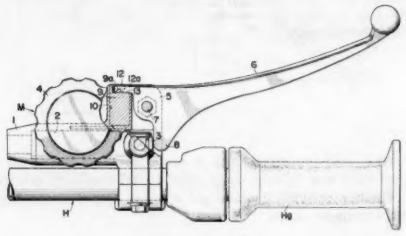
Yuzo Yamazaki, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed May 2, 1979, Ser. No. 35,225

Claims priority, application Japan, May 17, 1978, 53-66161[U]; Jul. 25, 1978, 53-102052[U]

Int. Cl.³ H01H *9/06*

U.S. Cl. 200—61.85 **4 Claims**



1. A brake switch and actuator combination for autobicycle or the like comprising: a cylinder body of a brake master cylinder arranged frontwardly of a steering handle; a piston slidably accommodated in a cylinder bore of said cylinder body; a brake lever pivotally supported on one end of said cylinder body through a pivot so that said piston may be operated; a substantially cylindrical brake switch disposed below the cylinder bore with its longitudinal axis transverse to the longitudinal axis of the cylinder bore and also transverse to the longitudinal axis of the pivot; a movable member of the brake switch projected from a front end thereof; and a switch actuating arm formed on said brake lever and which has a downwardly extending portion engageable with said movable switch member, said switch actuating arm also constituting a stop which contacts a stop surface formed on said cylinder body to determine the retracted position of said brake lever.

4,275,281

APPARATUS FOR HEATING AN ELECTRICALLY CONDUCTIVE COOKING UTENSIL BY MAGNETIC INDUCTION

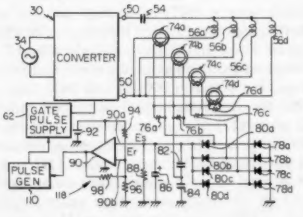
Mitsuyuki Kiuchi, c/o Matsushita Electric Industrial Company, Ltd., No. 1006, Oaza Kadoma, Kadoma City, Osaka, Japan

Continuation of Ser. No. 783,701, Apr. 1, 1977, abandoned, which is a division of Ser. No. 577,156, May 14, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,227

Claims priority, application Japan, May 17, 1974, 49-55890; May 17, 1974, 49-55891; May 17, 1974, 49-55893

Int. Cl.³ H05B *6/06, 6/12*

U.S. Cl. 219—10.49 R **4 Claims**



1. An induction heating apparatus comprising:

a heating unit including a plurality of heater coils connected with each other in parallel;

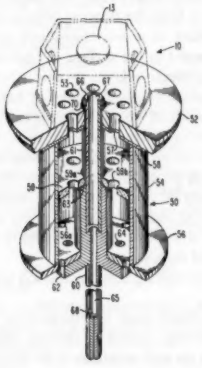
a static power converter connected between said heating unit and a low-frequency a.c. power source for converting the low-frequency power into a high-frequency power and supplying said high-frequency power to said heating unit thereby causing said heater coils to produce time-varying magnetic fields, said converter including a switching circuit connected in parallel with said heating unit and said power source for producing said high-frequency power with a frequency substantially equal to a frequency with which the switching circuit is triggered; and

control means including a reference voltage generator, a current detector for producing a voltage representative of current flowing through said heater coils, said current detector comprising magnetic cores respectively linked with lines connected to said heater coils, a plurality of windings each comprising turns wound on a corresponding one of said magnetic cores, a rectifier connected to said windings, and a timing capacitor connected to said rectifier for storing said voltage across said timing capacitor, a single comparator connected to said reference voltage generator and current detector for producing an ON signal when the voltage from said current detector is lower than the reference voltage of said reference voltage generator and for producing an OFF signal when the voltage from said current detector exceeds the reference voltage, a pulse generator connected to said comparator for producing pulses when receiving said ON signal and ceasing to produce pulses when receiving said OFF signal, and a gate pulse supply circuit connected to said pulse generator and said switching circuit for triggering said switching circuit in response to said pulses from said pulse generator.

4,275,282
CENTERING SUPPORT FOR A ROTATABLE WAFER SUPPORT SUSCEPTOR

Edward A. Miller, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,878
Int. Cl.³ C23C *13/08*; H05B *6/10*
U.S. Cl. 219—10.49 R **7 Claims**



1. In a susceptor of the type adapted to support one or more substrates within a reaction chamber, the susceptor being disposed for rotation in a vertical position wherein the improvement comprises:

a rotatable vertical shaft;

a horizontal flat member affixed perpendicularly to the shaft;

a cylindrical tube positioned about said shaft and supported on its lower edge with frictional engagement on the surface of said flat member;

a base member affixed to the bottom of said susceptor and adapted to support with frictional engagement said susceptor in a vertical orientation, said base member having a central aperture and having a bottom flat surface for support on the upper edge of said tube, the respective upper and lower edges of said tube being in frictional relationship with the surfaces of said base member and said flat member contiguous with said upper and lower tube edges;

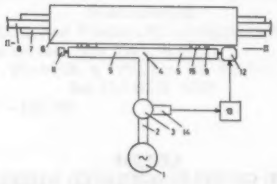
an apertured disc disposed within said tube and operatively associated with said shaft and adapted to restrain radial movement of said tube relative to the shaft; and

means extending from said rotatable shaft to pass through said base member aperture for maintaining the position of said base member in fixed axial and symmetrical relation with said rotatable shaft.

4,275,283
APPARATUS FOR HEATING RUBBER PRODUCTS WITH UHF ENERGY

Harry Focht, Hemmingen, Fed. Rep. of Germany, assignor to Paul Troester Maschinenfabrik, Hanover, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,715
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846610
Int. Cl.³ H05B *6/78, 6/68*
U.S. Cl. 219—10.55 F **9 Claims**



1. Apparatus for heating strand-form rubber products to vulcanize them, comprising an elongate resonator chamber, means for transporting said products through said resonator chamber in a direction lengthwise of said chamber, a microwave generator for producing UHF-energy, means for conducting said UHF-energy from said generator to said chamber comprising a wave guide having a trunk portion connected with said generator and divided at a junction point into two branches, and means coupling said branch wave guides to said resonator chamber at locations spaced from the ends of said wave guide branches and spaced apart from one another lengthwise of said resonator chamber to transmit UHF-energy to said resonator chamber and thereby produce a microwave field in said chamber to heat and thereby vulcanize said product, and tuning means in at least one of said wave guide branches adjacent the coupling of said wave guide branch to the resonator chamber for varying the microwave field geometry in said resonator chamber and vary the wave resistance of said wave guide to tune said wave guide to said generator.

4,275,284
GAS-SHIELDED ARC WELDING TORCH

James L. Conley, Kent, Wash., assignor to Conley and Kleppen Enterprises, Inc., Auburn, Wash.

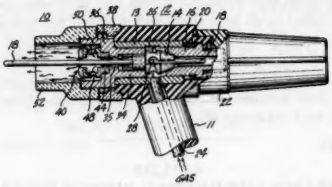
Filed Jul. 26, 1979, Ser. No. 61,002
Int. Cl.³ B23K *9/16*
U.S. Cl. 219—74 **5 Claims**

2. In a gas shielded arc welding torch wherein a torch body has a hollow head which rearwardly includes means for clamping an electrode extending forwardly of said head and said clamping means is adapted to receive and pass gas in a forward direction around the electrode, the improvement, consisting essentially of:

a gas distributor located at the front of the hollow head and comprising:

a cup member adapted to receive gas moving forwardly around an electrode;

means forming a ported chamber in said cup member having an external cylindrical surface spaced from and concentric of said cup interior and forming therewith an



annular gas passageway of predetermined dimension, said chamber being ported normal of the axis of said head to discharge gas into said annular passageway;

said chamber having an electrode passage permitting the protrusion forwardly of an electrode passed through said chamber; and

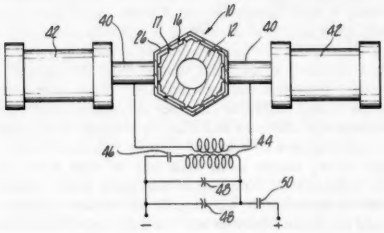
nozzle means surrounding and extending forward of the lip of said cup member.

4,275,285

METHOD OF WELDING CAPPED WHEEL NUT

Albert A. Jadach, Royal Oak, Mich., assignor to Towne Robinson Fastener Company, Southfield, Mich.

Continuation of Ser. No. 876,920, Feb. 10, 1978, abandoned.
This application Jul. 25, 1979, Ser. No. 60,325
Int. Cl.[3] B23K *11/14;* **B21D** *53/24;* **F16B** *37/14*
U.S. Cl. 219—93 **25 Claims**



1. The method of forming a capped nut having a nut body with a central threaded aperture and polygonal sides, and a sheet metal cap adapted to at least partially surround the sides, comprising:

bringing a pair of electrodes into pressured contact with opposed sides of the cap to impose opposed forces between the cap and the nut body,

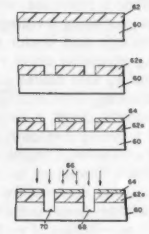
and passing a high current electrical pulse between the electrodes to cause a primary current flow through the contacting areas between the cap the the nut body adjacent the electrodes and through the nut body to cause welding of the cap to the nut body at the areas adjacent the electrodes.

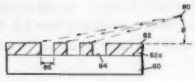
4,275,286

PROCESS AND MASK FOR ION BEAM ETCHING OF FINE PATTERNS

Le Roy H. Hackett, Jr., Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1978, Ser. No. 965,964
Int. Cl.[3] B23K *15/00;* **C23F** *1/02;* **C23C** *15/00;* **H01L** *21/302*
U.S. Cl. 219—121 EK **11 Claims**





7. In a process for ion beam etching selected areas in a target which comprises providing said target, forming a patterned resist mask on the surface of said target to expose said selected areas in said target, and directing a beam of chosen ions through openings in said resist mask to said target, the improvement comprising evaporating a selected material which ion beam etches more slowly than said target and at a temperature which is lower than the flowing temperature of said resist, onto said resist mask at a predetermined controlled angle of incidence with respect to the surface of said resist mask to form a relatively thin protective layer on said resist mask, said predetermined controlled angle of incidence being an acute angle sufficient to deposit said layer with edges and patterns replicated from edges and patterns in said resist mask and with a negligible amount of said selected material deposited on said target wherein said protective layer prevents or substantially impedes the erosion of said resist mask during said ion beam etching of said target and said selected areas are formed by said ion beam etching to have walls substantially perpendicular to said surface of said target.

10. A process for making a protected ion beam etching mask which includes:

(a) providing a resist mask on the surface of a chosen substrate and having openings therein which expose preselected areas on said substrate to be ion beam etched; and

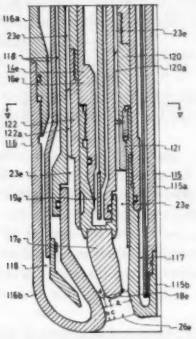
(b) depositing a selected material onto said resist mask at a predetermined controlled angle of incidence with respect to the surface of said resist mask to thereby form a thin protective layer on said resist mask, said predetermined controlled angle of incidence being an acute angle sufficient to deposit said layer with edges and patterns replicated from edges and patterns in said resist mask, whereby a negligible amount of said selected material reaches said substrate and said thin protective layer prevents or substantially impedes any erosion of said resist mask during the ion beam etching of said substrate.

4,275,287

PLASMA TORCH AND A METHOD OF PRODUCING A PLASMA

Susumu Hiratake, Kasugai, Japan, assignor to Daidoto Kushuko Kabushikaisha, Japan

Filed Mar. 21, 1979, Ser. No. 22,651
Claims priority, application Japan, Sep. 28, 1978, 53-119575
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PR 3 Claims



1. A plasma torch comprising:

(i) an annular cathode having an annular inner peripheral portion with an edge face for discharge of a film-like plasma arc towards an axis of the cathode,

(ii) a pair of annular nozzle elements disposed coaxially with respect to said cathode and each situated at a spacing axially at a respective side of the cathode, each nozzle element including an inner peripheral edge portion which extends beyond the inner peripheral edge face of the cathode in the direction towards said axis, a respective annular opening being defined between the inner peripheral edge portion of each nozzle element and the edge face of the cathode for discharge of gas towards the axis at each side of the arc,

(iii) a magnetic field generator for exerting a magnetic field on said arc to cause said arc to rotate along said annular edge face of said cathode.

4,275,288

APPARATUS FOR MACHINING MATERIAL

Günter Makosch, Sindelfingen; Franz Schedewie; Arno Schmackpfeffer, both of Böblingen, and Jörg Ziller, Sindelfingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,414
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821883
Int. Cl.³ B23K 27/00
U.S. Cl. 219—121 LR 1 Claim

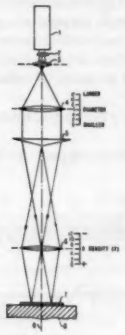
1. Apparatus for machining material as by drilling, punching and welding by means of a radiant energy beam of gaussian profile at the workpiece,

characterized by

an optical converting element arranged in the path of the processing beam, for the axis-symmetrical conversion of the paraxial and of the off-axis cross-sectional areas of the processing beam to a substantially uniform temperature gradient across the workpiece by

a focusing element arranged beyond it in the direction of beam propogation, by

said converting element and said focusing element selectively being arranged to be shifted selectively in the direction of the optical axis relatively to each other for adjusting the respective energy density distribution and the beam diameter, and by



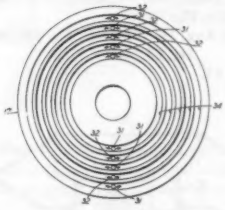
said converting element and said focusing element selectively being associated with calibrated scales giving the relative diameter and the relative energy density distribution of the generated processing beam directly.

4,275,289

UNIFORMLY COOLED PLASMA ETCHING ELECTRODE

Herbert A. Lord, East Windsor, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,002
Int. Cl.³ B23K 9/00
U.S. Cl. 219—121 PR 5 Claims



1. A method of uniformly cooling a substantially planar electrode to within a predetermined temperature range, the electrode having a plurality of concentric channels therein separated by a plurality of concentric walls, the method comprises the step of:

flowing a coolant fluid along adjacent channels in opposite directions in such a manner that the temperature of the fluid in any one channel is different than the temperature of the fluid in an adjacent channel and the average temperature of each adjacent pair of channels falls within the predetermined temperature range.

4,275,290

THERMALLY ACTIVATED LIQUID INK PRINTING

Paolo Cielo, Dartmouth, and William D. Westwood, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 903,516, May 8, 1978, abandoned. This application Jun. 14, 1979, Ser. No. 48,670
Int. Cl.³ H05B 1/00
U.S. Cl. 219—216 5 Claims

1. A thermally activated liquid ink printer comprising:

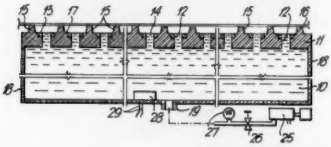
a reservoir for holding liquid ink;

a plurality of orifices extending through a wall of the reservoir;

means for supplying ink to the reservoir at a predetermined pressure to fill each of the orifices to an outer end thereof, the orifice outer ends located at an outer surface of the reservoir wall and each orifice outer end being of a dimension such that surface tension forces on the ink balance said predetermined pressure to retain the liquid ink within the reservoir;

means for positioning paper adjacent to the outer ends of the orifices;

means for moving the paper past the orifice outer ends; and



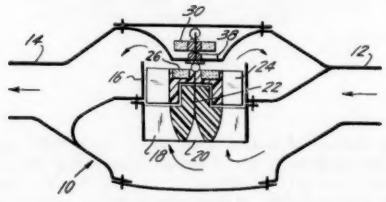
an electrical resistive heater surrounding each orifice at its outer end, the heater operable on receiving an energizing pulse to heat ink at the outer end of its associated orifice to rapidly reduce the surface tension of the ink in the outer end of the orifice and thereby cause the heated ink to issue from the orifice outer end under the influence of said predetermined pressure and be deposited on the paper, said heated ink being replaced in the orifice by unheated ink subject to surface tension forces balancing said predetermined pressure whereby abruptly to terminate issue of ink form the orifice.

4,275,291

ROTATION SENSOR

Murray F. Feller, Dunnellon, Fla., assignor to Wilgood Corporation, Jacksonville, Fla.

Filed Aug. 21, 1978, Ser. No. 935,562
Int. Cl.³ G01F *1/06*
U.S. Cl. 235—92 FL **13 Claims**



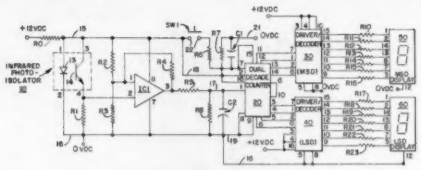
1. Flow measuring apparatus comprising means for defining a fluid-flow passage and including a non-magnetic wall, a flow-activated rotor in said passage bearing first rotary means opposite to said nonmagnetic wall, second rotary means outside said wall coaxial with said first rotary means, said first and second rotary means having first and second localized portions, respectively, of magnetic material opposite each other and a said localized portion of at least one of said rotary means being magnetized for causing the first and second rotary means to rotate in unison, said first and second localized portions staying opposite each other and moving in respective mutually opposite circular paths, a detector that yields changing electrical output in response to changes in imposed magnetic field, said detector being disposed outside said wall between said circular paths for providing a succession of signals proportional to the number of rotations of said flow-activated rotor, and means for indicating a measure of the rotation of rotary device, said last-named means being coupled to said detector and responsive thereto.

4,275,292

METHOD AND APPARATUS FOR POSITIONING A DRAG RACING VEHICLE TO A STARTING-LINE POSITION

Ronald W. Corbi, 368 Edgewood Dr., Columbiana, Ohio 44408

Filed Mar. 19, 1979, Ser. No. 21,725
Int. Cl.³ G06M *3/06*
U.S. Cl. 235—92 DN **2 Claims**



1. An apparatus for positioning a drag racing vehicle to a preferred "staged" position at the starting-line of a drag racing track, said apparatus comprising:

(a) means responsive to the movement of the drag racing vehicle for producing a series of pulses, the number of which is indicative of the distance travelled by said drag racing vehicle at the starting-line area of a drag racing track;

(b) counter means connected in circuit to said means responsive to the movement of the drag racing vehicle for counting said series of pulses;

(c) decoder/driver means connected in circuit with said counter means;

(d) digital display readout means connected in circuit to the output of said decoder/driver means; and

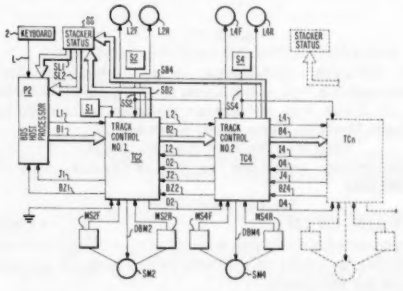
(e) external reset means connected in circuit with said counter means for resetting said counter means to erase the stored count of said series of pulses therein.

4,275,293

JAM DETECTION AND RECOVERY SYSTEM

John M. Chambors, Canton, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 31, 1979, Ser. No. 108,797
Int. Cl.³ G01D *21/04*
U.S. Cl. 250—223 R **10 Claims**



1. A jam detection and recovery system for a document processor employing a plurality of diverter gates aligned along a document transport track, in association with a plurality of pockets, to receive and route documents into the pockets on a selective basis, comprising:

sensing means positioned along a document transport track to detect the presence of documents at selected points along the track and provide signals when documents are present;

said sensing means including at least one sensing means positioned along the track before a first diverter gate and

sensing means associated with each of a plurality of diverter gates to detect the presence of a document at each gate and provide a signal;

a track controller coupled to each of a plurality of said sensing means to receive said signals;

said track controllers responding to selected pluralities of said signals to determine when a jam has occurred in the track; and

said track controllers providing warning signals, when a jam has occurred, of use to enable the diverter gates to divert documents from the track to suitable pockets to avoid further jamming.

4,275,294

SECURITY SYSTEM AND STRIP OR STRAND INCORPORATING FIBRE-OPTIC WAVE-GUIDE MEANS THEREFOR

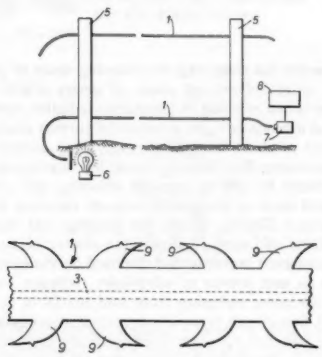
Roderick I. Davidson, Farnham, England, assignor to Fibun B.V., Netherlands

Filed Sep. 19, 1978, Ser. No. 943,693

Claims priority, application United Kingdom, Sep. 28, 1977, 40412/77

Int. Cl.³ G02B 5/14

U.S. Cl. 250—227 **13 Claims**



1. A security system comprising a fence, wall or the like disposed to extend along a given boundary, at least one strand running along the boundary and carried by the fence, wall or the like, the strand including a fibre-optic waveguide and being formed with barbs or serrations along its edges, an energy source for directing optical radiation along the waveguide from one end thereof, a detector for detecting radiation leaving the waveguide from the other end, and a warning device which is arranged to be actuated by the detector when there is a predetermined change in the light transmitting properties of the waveguide.

4,275,295

LIMIT AND MEASUREMENT VALUE TRANSMITTER

Roland Menningen, Aarau; Kurt Ehrsam, Brugg; Jürg Oberhänsli, and Kurt Grünig, both of Küttigen, all of Switzerland, assignors to Hectronic AG, Buchs, Switzerland

PCT No. PCT/CH78/00023, § 371 Date May 23, 1979, § 102(e) Date May 23, 1979, PCT Pub. No. WO79/00179, PCT Pub. Date Apr. 19, 1979

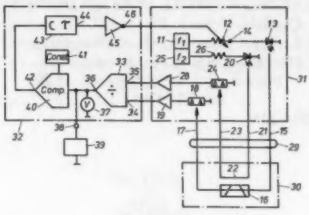
This PCT application filed May 23, 1979, Ser. No. 41,915

Claims priority, application Switzerland, Oct. 5, 1977, 12164/77

Int. Cl.³ G01D 5/34

U.S. Cl. 250—227 **9 Claims**

1. A method of obtaining and transmitting signals characterizing at least one physical property of a substance which is to be monitored, by means of feeler transducer, light transmitter and light receiver, wherein there is obtained between a measuring light current and a reference light current extending parallel thereto an electrical information signal and the measuring light current and the reference light current are guided through a single light guide bundle, characterized by the features that the measuring light current is guided in timewise alternation to the reference light current at least along part of its transmission paths by means of a common light guide.



4,275,296

STABILIZED FIBER OPTICAL MEASURING APPARATUS

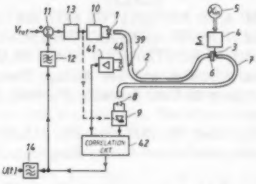
Morgan Adolfsson, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed May 29, 1979, Ser. No. 42,954

Claims priority, application Sweden, Jun. 2, 1978, 7806486

Int. Cl.³ G02B 5/14

U.S. Cl. 250—227 **12 Claims**



1. Stabilized fiber optical measuring device for measuring dynamic transients in physical magnitudes, comprising:

a transducer acted upon by the physical magnitude to be measured;

means for generating an optical input signal to said transducer and including at least one light source;

at least one optical fiber for transmitting light from said means for generating an optical input signal to said transducer and for transmitting the optical output signal from said transducer to said at least one optical detector;

said transducer including means for modulating at least part of the optical input signal thereto such that the optical output signal therefrom contains at least one measuring component representing the magnitude to be measured and at least one stabilization component which is less dependent on said magnitude than said measuring component said at least one measuring component and said at least one stabilization component being transmitted at least partially in the same optical fiber;

means for processing the optical signal output of said transducer and including at least one optical detector for detecting said optical output signal and further including means for separating said measuring component and said stabilization component from one another, means for generating a measuring signal and a compensating signal, and means responsive to said compensating signal for reducing the dependence of the measuring signal on instabilities in the measuring device; and

said means for modulating generating an attenuation of the transmission for the optical input signal and the optical

output signal from said transducer, said attenuation being dependent on the magnitude of the measuring component.

4,275,297

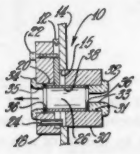
ELECTRO-OPTICAL STRAND DETECTOR

Sheldon A. Canfield, Newark; Richard H. Pierce, Columbus, and Kenneth L. Rapp, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 2, 1979, Ser. No. 63,295

Int. Cl.³ H01J *5/02*

U.S. Cl. 250—239 **7 Claims**



1. In a strand sensing device having an electro-optical sensor the improvement comprising; an optically transparent tubular shield surrounding a path of strand advancement at the sensor, wherein the shield is positioned intermediate the sensor and said path and the confocal region of the sensor is located immediately adjacent the tubular shield within said shield.

4,275,298

METHOD OF AND APPARATUS FOR DETERMINING THE PROPORTION OF AT LEAST ONE MATERIAL IN A MOVING MIXTURE OF MATERIALS

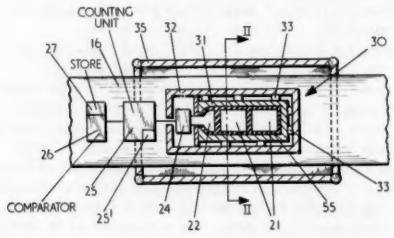
John S. Wykes, Allenton, and Ian Adsley, Branston, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed May 31, 1978, Ser. No. 911,247

Claims priority, application United Kingdom, May 31, 1977, 22941/77

Int. Cl.³ G01V *5/00*; G01N *23/00*; G01T *1/20*

U.S. Cl. 250—255 **8 Claims**



1. Apparatus for determining the constituency proportion of at least one material in a moving mixture of coal and stone or shale materials comprising a sensor means for sensing an intensity of radiation emitted by at least one of the materials in the moving mixture of materials, signal deriving means for deriving an electrical signal indicative of the radiation intensity, the signal deriving means further comprising averaging circuitry connected to the signal deriving means for averaging the radiation intensity signal over a time period for deriving an electrical signal of averaged radiation intensity, comparator means for comparing the derived electrical signal of averaged radiation intensity with at least one preselected reference value of signal corresponding to a known proportion and means for deriving a second electrical signal indicative of said comparison and consequently of the ratio of said at least one material in the mixture of materials.

4,275,299

METHOD AND APPARATUS FOR DETECTING A FLUORESCENT AREA ON A SHEET OF PAPER

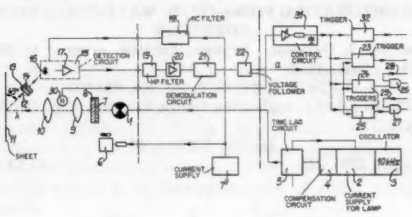
Nicolas Favre, Cornaux, Switzerland, assignor to Compagnie Industrielle Radioelectrique, Switzerland

Filed Apr. 17, 1979, Ser. No. 30,819

Claims priority, application Switzerland, Apr. 18, 1978, 4131/78

Int. Cl.³ G06K *7/10*; G01N *21/38*

U.S. Cl. 250—271 **3 Claims**



1. Apparatus for detecting on a moving sheet of paper the presence, in predetermined areas, of marks which become fluorescent when exposed to ultraviolet radiation, comprising a source of ultraviolet light, a source of current modulated at a frequency of about 10 KHz for supplying current to said ultraviolet source, first filtering means for filtering ultraviolet light produced by said source and directing said ultraviolet light on said sheet to produce fluorescent radiation from said marks, second filtering means for filtering said fluorescent radiation from said marks, a first photo-electric element sensitive to fluorescent radiation and disposed on the same side of said sheet as said source of ultraviolet radiation to receive filtered fluorescent radiation from said marks to produce a first-signal, first circuit means for detecting, demodulating and amplifying said first signal received from said first photo-electric element, a second photo-electric element disposed between said first filtering means and said sheet to receive directly ultraviolet light from said source filtered by said first filtering means to produce a second signal, second circuit means for detecting, demodulating and amplifying said second signal, means coordinated with movement of said sheet to produce first and second reading windows, first trigger means controlled by said first signal and said first reading window producing means to produce a first output signal measured on a first predetermined area of the sheet, second trigger means controlled by said first signal and said second reading window producing means to produce a second output signal measured on a second predetermined area of the sheet, and means controlled by said second signal for regulating the operating level of both of said trigger means.

4,275,300

FLUORESCENT COMPOSITION, A PROCESS FOR SYNTHESIZING THE FLUORESCENT COMPOSITION, AND METHODS OF USE OF THE FLUORESCENT COMPOSITION

Seth R. Abbott, Concord, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 23, 1978, Ser. No. 953,380

Int. Cl.³ G01T *1/10, 1/20*; G01N *23/00, 23/22, 31/08*; C09K *11/02, 11/06, 11/20*

U.S. Cl. 250—304 **18 Claims**

1. A method of detecting the radioactivity of a radioactive species, said method comprising the steps of:

(a) placing the radioactive species in direct contact with a

fluorescent composition consisting essentially of inert porous silica or alumina particles having a size of about 5 to 20 microns, and a fluorescent material, said fluorescent material being fixedly attached by covalent chemical bonding to the surface of said particles; and

(b) detecting the degree of fluorescence energized by emitted radioactivity;

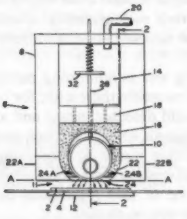
provided that when the radioactivity being detected is that of tritiated hydrogen, said fluorescent composition comprises particles having a size of about 5 to 10 microns.

4,275,301

CORONA DISCHARGE DEVICE

Werner Rueggeberg, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 10, 1980, Ser. No. 128,539
Int. Cl.³ H01T *19/04*
U.S. Cl. 250—326 **4 Claims**



1. An apparatus for treating a material with a corona discharge characteristic of a selected gas or gas mixture which apparatus comprises:

(a) a housing;

(b) a perforated plate separating the housing into an upper plenum chamber and a lower plenum chamber, the lower plenum chamber having inwardly tapered wall means defining an opening in the housing at the bottom of the lower plenum chamber;

(c) an inlet means opening into the upper plenum chamber for supplying a gas or gas mixture into the upper plenum chamber whereby the gas passes from the upper plenum chamber through the perforated plate and is uniformly distributed into the lower plenum chamber wherein the tapered wall means directs the gas towards the opening at the bottom of the lower plenum chamber;

(d) a ground electrode means positioned parallel to the opening and spaced a distance apart from the housing; and,

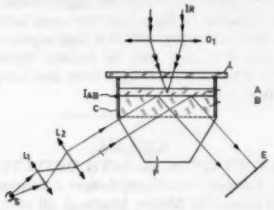
(e) at least one corona discharge electrode means positioned adjacent and parallel the opening in the lower plenum chamber, dividing the opening into gas passageways around the corona discharge electrode means such that the gas flows perpendicular to the lengthwise direction of the electrode means and exits through the opening into the region existing below the corona discharge electrode means and above the ground electrode means where the gas or gas mixture is ionized forming a corona discharge characteristic of the gas introduced through the inlet means wherein a material to be treated is passed.

4,275,302

METHOD AND DEVICE FOR CONVERTING THERMAL IMAGES INTO SECONDARY IMAGES, E. G. VISIBLE IMAGES

Christian Imbert, Ballancourt; Yves Levy, Malakoff, and Jean-Claude Loulergue, Paris, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Sep. 24, 1979, Ser. No. 78,559
Claims priority, application France, Sep. 29, 1978, 78 28041
Int. Cl.³ H01J *31/50*; G02F *1/29*
U.S. Cl. 250—330 **31 Claims**



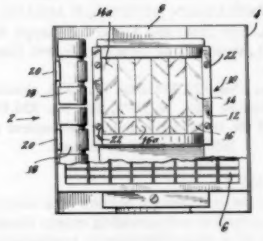
6. A thermal image converter for converting thermal radiation emitted by an object, comprising a plane optical interface, a layer of thermal radiation absorbing liquid disposed to one side of said interface, said interface being reflective or transmissive, an optical system for focusing thermal radiation emitted by the object and forming a thermal image on said layer, the temperature distribution of said thermal image resulting in a variation of physical parameters of said layer, means for illuminating the other side of said interface providing a beam of parallel light rays or a beam of light from a point source, viewing means being arranged to receive the beam reflected or transmitted by said interface which undergoes a corresponding variation to its optical properties, the improvement comprising said interface being a liquid-liquid interface having low surface tension formed by a mixture of two liquids, liquids I and II, which are partially miscible at operating temperature and pressure.

4,275,303

PASSIVE INFRARED INTRUSION DETECTION SYSTEM

Philip H. Mudge, New Fairfield, Conn., assignor to Arrowhead Enterprises, Inc., New Milford, Conn.

Filed Nov. 13, 1979, Ser. No. 93,443
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—342 **10 Claims**



1. In a passive infrared intrusion detector of the type including a heat sensor for detecting a change in temperature caused by a passing intruder, a lens mounted in front of said heat sensor for receiving infrared radiation from the body of said intruder and focusing said radiation on said heat sensor, and

means coupled to said heat sensor for actuating a signal when said heat sensor detects said temperature change,

the improvement comprising:

a lamp for emitting visible light positioned within said intrusion detector proximate to said heat sensor,

said lens including a first lens segment positioned to receive infrared radiation from a first zone to be protected and focus a portion of said radiation on said heat sensor, and a second lens segment positioned to receive radiation from a second zone to be protected and focus a portion of said radiation on said heat sensor,

said second lens segment being positioned relative to said lamp and said heat sensor such that light from said lamp passes through said second lens segment and parallels that portion of radiation from said first zone which is focused on said heat sensor by said first lens segment,

wherein said first zone may be located by adjusting said intrusion detector so that light from said lamp is observed in said first zone.

4,275,304

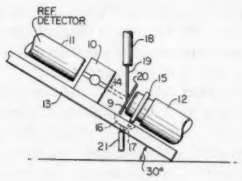
SHORT OPTICAL PATH DETECTOR

Alexander E. Lawson, Mendham; Robert J. Mathieu, Mountain Lakes, and James M. Miller, Madison, all of N.J., assignors to GOW-MAC Instrument Co., Bound Brook, N.J.

Continuation of Ser. No. 893,406, Apr. 4, 1978, abandoned. This application Sep. 5, 1979, Ser. No. 72,685

Int. Cl.³ G01J *1/42*

U.S. Cl. 250—373 **7 Claims**



1. In an optical technique analytic instrument system wherein a liquid test sample is flowed through an optical path crossed by a beam, the improvement which comprises a flat surface disposed across the beam and at an acute angle to horizontal, said surface being transparent to the beam, and sample delivery means flush to said surface for flowing an unconfined falling film of a partially transparent liquid test sample over said surface, the falling film of liquid test sample on said surface constituting the analytic instrument optical path through the liquid test sample.

4,275,305

TOMOGRAPHIC SCANNING APPARATUS WITH IONIZATION DETECTOR MEANS

Janos A. Racz, San Jose, and Edward J. Seppi, Menlo Park, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Division of Ser. No. 722,931, Sep. 13, 1976, abandoned. This application Aug. 24, 1978, Ser. No. 936,552

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ G01N *21/00*

U.S. Cl. 250—445 T **5 Claims**

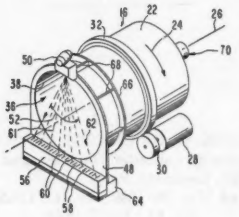
1. Apparatus for examining a portion of a subject by means of penetrating radiation and providing output signals for use in reconstruction of a two-dimensional representation of the structure residing in a thin section taken through said subject; said apparatus comprising:

an assembly rotatable about an axis extending along a central opening defined thereby;

means for positioning the portion of said subject to be examined within said central opening, whereby said axis of assembly rotation is substantially perpendicular to said section;

a source of penetrating radiation being mounted on said assembly toward one side thereof and providing radiation in the form of a fan beam;

detector means for said radiation positioned on said assembly opposite said source for detecting radiation progressing laterally across said section comprising a pressurized ionization chamber including an array of side-by-side mutually insulated strip detector electrodes spaced from a common high voltage electrode, the principal axis of each said strip electrode being oriented along a radius extending toward said radiation source, and connection means



for providing potential to said high voltage electrode and for taking output signals from said detector electrodes;

means for rotating said assembly whereby said fan beam impinges upon said subject at a plurality of incident directions;

signal processing and conditioning means mounted on said assembly and movable therewith, for receiving the output signals from said detector means and amplifying and converting said signals to digital form; and

first interconnection means for receiving the outputs from said signal processing and conditioning means and enabling interfeed of said digitalized output signals to an image reconstruction station.

4,275,306

ALIGNMENT APPARATUS

Yuzo Kato; Yasuo Ogino; Ryozo Hiraga; Hideki Yoshinari, all of Yokohama; Masao Tozuka, Ohmiya, and Ichiro Kano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 16,165

Claims priority, application Japan, Feb. 27, 1978, 53-21765

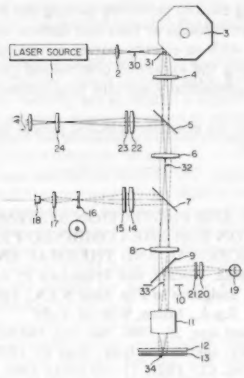
Int. Cl.³ G01N *21/86*

U.S. Cl. 250—548 **1 Claim**

1. An alignment apparatus comprising a first support member for supporting a first sheet-like member provided with first and second alignment marks representing first and second standard points, respectively, spaced by a predetermined distance along a first standard line, a second support member for supporting a second sheet-like member provided with third and fourth alignment marks, along a second standard line, representing first and second reference points, respectively, corresponding to said standard points, driving means for moving at least one of said first and second support members relative to the other, means for scanning said alignment marks on said first and second sheet-like members substantially along said first standard line to read the alignment marks and produce signals, and circuit means for processing the signals produced by said scanning means and producing a signal to be applied to said driving means to place the first standard point and the second standard point under a predetermined positional relationship with the first reference point and the second reference point, respectively,

said driving circuit including first discriminating means for discriminating whether the deviation between the first

standard point and the first reference point is within a tolerable range, second discriminating means for discriminating whether the deviation between the second standard point and the second reference point is within a tolerable range, and means for changing the tolerable range for the



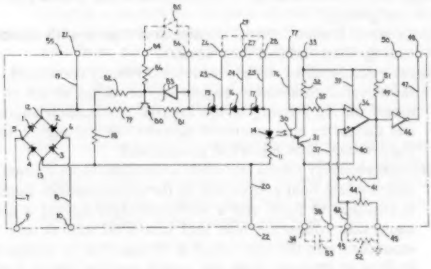
deviation between the first standard point and the first reference point, and the tolerable range for the deviation between the second standard point and the second reference point, when the distance between the first reference point and the second reference point is not a predetermined one.

4,275,307

INPUT CIRCUIT FOR DIGITAL CONTROL SYSTEMS

Odo J. Struger, Chagrin Falls, and Joseph R. Branc, Wickliffe, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 897,681, Apr. 19, 1978, abandoned. This application May 14, 1979, Ser. No. 38,506
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **18 Claims**



1. An input circuit for a digital system, the combination comprising:

a rectifier circuit having a pair of a.c. input terminals and a pair of output terminals;

a series circuit connected across the rectifier circuit output terminals and including the following series connected elements:

(a) a current limiting circuit which limits the current flowing in the series circuit to a preselected maximum value,

(b) a plurality of series connected zener diodes having terminals which enable the zener diodes to be selectively shorted out of the series circuit to alter the voltage drop thereacross, and

(c) a light emitting element which forms part of a photo coupler and which generates an electrical signal in a light sensing portion of the photo coupler when current flows in the series circuit;

and

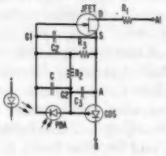
an output drive circuit which connects to said light sensing element and which converts the signal generated thereby to a logic level signal at an output terminal which is suitable for application to the data bus of the digital system.

4,275,308

OPTICALLY TOGGLED DEVICE

Mahmoud A. El Hamamsy, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 30, 1980, Ser. No. 154,857
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **8 Claims**



1. A device comprising:

a gated diode switch having anode, cathode, and gate electrodes; first and second terminals; said cathode being connected to said second terminal; and means for changing the current conduction state of said device

CHARACTERIZED IN THAT

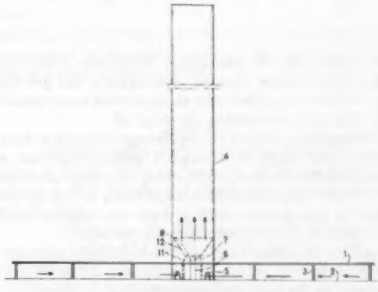
said means comprises a first field effect transistor having drain, gate and source electrodes, said source electrode being connected to said anode electrode, said drain electrode being connected to said first terminal and a photodiode array, said array having a first terminal connected to said gate electrode of said gated diode switch and a first series circuit comprising a second terminal connected to said gate electrode of said field effect transistor.

4,275,309

SYSTEM FOR CONVERTING SOLAR HEAT TO ELECTRICAL ENERGY

Robert E. Lucier, 271 Maple Ave., Windsor, Ontario, Canada

Continuation of Ser. No. 817,819, Jul. 21, 1977, abandoned, which is a continuation of Ser. No. 621,947, Oct. 14, 1975, abandoned. This application May 25, 1979, Ser. No. 42,571
Int. Cl.³ F03D *11/04*
U.S. Cl. 290—1 R **1 Claim**



1. Apparatus for converting solar heat into electrical energy for installation in vast, torrid, unoccupied areas, said apparatus comprising an accumulator for collecting large quantities of

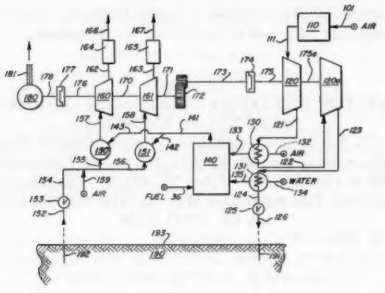
solar heated air and including a roof covering a vast area of ground, said roof being supported and spaced from the ground by a plurality of spaced supports, a huge hollow cylindrical tower centrally located with respect to said roof and passing through said roof and supported on the ground, said tower having spaced air entrances in its base communicating directly with the space between the ground and said roof to receive heated air directly from the space, a solid supporting pedestal centrally located within said tower and supported on the ground, an air deflector including a cylindrical wall spaced around and enclosing said pedestal, said wall having a plurality of angular air inlets communicating with said tower near said tower entrances, the base of said wall also being supported on the ground, said air deflector also having an upwardly-extending, converging, truncated conical portion connected to the upper edge of said cylindrical wall, and said deflector further including an upwardly-extending, diverging, truncated conical portion connected to the upper edge of the converging truncated conical portion, the upper edge of said diverging conical portion being connected to the inner surface of said tower, said diverging conical portion being open and unobstructed and extending only a short distance upwardly relative to the height of said tower, and an electrical generator supported on said pedestal, said generator having a horizontal impeller attached to a shaft of the generator, said impeller being located in the area where said converging and diverging conical portions of said deflector meet, said impeller being rotated by high velocity hot air received from the space between the ground and said roof through said tower entrances and said angular inlets.

4,275,310

PEAK POWER GENERATION

William A. Summers, 1015 Melbrook Dr., Munster, Ind. 46321, and Robert L. Longardner, 5321 Radnor Rd., Indianapolis, Ind. 46226

Filed Feb. 27, 1980, Ser. No. 125,239
Int. Cl.³ F02C *1/00*; F28D *19/00*
U.S. Cl. 290—1 R **10 Claims**



1. A process for the generation of electric power during periods of peak power demand, employing a fuel gasification facility, turbine expanders, and an associated underground air storage reservoir, comprising the steps of:

(a) compressing ambient air, by passage through at least one compressor stage, to a pressure greater than that maintained in the air storage reservoir, the compressor system of at least one compressor stage being driven at least in part by engagement with at least one turbine expander powered by a hot combustion gas mixture;

(b) cooling the compressed air to substantially ambient temperature by heat exchange serially with air and water feed streams to the fuel gasification facility;

(c) injecting the cooled, compressed air into the underground air storage reservoir through a first well system in communication therewith;

(d) withdrawing stored, compressed air from the underground air storage reservoir through a second well system, responsive at least in part to a peak power demand;

(e) commingling the withdrawn compressed air with fuel gas, from the fuel gasification facility, in a combustion zone to effect substantially complete combustion of the fuel gas;

(f) generating electric power by passing the hot combustion gas mixture through at least one turbine expander in engagement with an electric power generation means;

(g) discharging the expanded combustion gas to the atmosphere at substantially ambient temperature and pressure; and

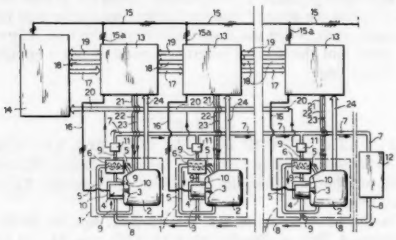
(h) delivering the generated electric power to a power supply system;

4,275,311

CONTROL AND PROTECTION SYSTEM FOR AN INSTALLATION FOR THE COMBINED PRODUCTION OF ELECTRICAL AND THERMAL ENERGY

Umberto Agazzone, Novara, and Francesco P. Ausiello, Turin, both of Italy, assignors to Fiat Auto S.p.A., Turin and Ercole Marelli & C. S.p.A., Milan, both of, Italy

Filed Apr. 25, 1980, Ser. No. 143,685
Claims priority, application Italy, May 23, 1979, 68093 A/79
Int. Cl.³ F02N *11/06*; H02J *3/04*
U.S. Cl. 290—2 **9 Claims**



1. An installation for the combined production of electrical energy and heat, including a plurality of modular power plants each comprising:

(a) a liquid cooled internal combustion engine with associated ignition and fuel feed devices;

(b) an asynchronous electric machine drivingly connected to the internal combustion engine and arranged to act as a motor during starting of the internal combustion engine and thereafter as a generator, driven from the engine, for the production of electrical power; and

(c) heat recovery means including a first fluid circuit around which a first fluid constituted by the engine coolant liquid is arranged to flow, and a heat exchanger having a primary side connected into said first fluid circuit and a secondary side through which a second fluid is arranged to flow to recover, from the engine coolant liquid, heat energy imparted thereto by the internal combustion engine;

said installation further including

a second fluid circuit around which said second fluid is arranged to circulate, the secondary sides of the said power-plant heat exchangers being connected into the second fluid circuit in parallel with each other,

a common electrical energy distribution line to which the said electric machines of the power plants are electrically connectable in parallel, and

a control and protection system including a plurality of control modules each arranged to control a respective one of the said power plants and to output an alarm signal upon the occurrence of any one of a number of alarm conditions corresponding to abnormal operation or failure

of the associated power plant, and a central unit connected to each of said control modules to feed control signals thereto and receive alarm signals therefrom; said central unit including;

control means manually operable to preset for running or to stop a selected one or ones of the modular power plants, said control means being arranged to initiate starting of a said power plant preset for running, by the output of a said control signal to the appropriate control module;

timer and interlock means operative to ensure that the said modular power plants which have been previously preset for running are started in a sequential manner;

temperature sensor means arranged to sense for each said power plant the temperature of the second fluid leaving the said heat exchanger thereof;

inhibit means connected both to the temperature sensor means and to receive said alarm signals from the control modules, said inhibit means being operative to prevent the starting, or to stop the operation, of a said modular power plant when either the corresponding control module outputs a said alarm signal or the corresponding temperature sensed by said sensor means exceeds a predetermined value; and

each control module including:

electrical connector means operative in response to a said control signal output from the said control means to interconnect the associated modular power plant and the said common electric energy distribution line whereby to energise the electric machine for operation as a starting motor;

delayed-activation means arranged to activate said ignition and fuel feed devices of the internal combustion engine included in the associated power plant after a predetermined delay relative to the operation of said connector means whereby to permit the electric machine to reach running conditions before the ignition of the internal combustion engine connected thereto;

first measuring means arranged to measure the current supplied by the electric machine when operating as a generator and to output a warning signal when said supplied current is below a first predetermined current value;

second measuring means arranged to measure the inter-winding leakage current of said electric machine, and to output a warning signal when said leakage current exceeds a second predetermined current value;

an output circuit connected to receive said warning signals from said first and second measuring means and operative upon receipt of a said warning signal to output to the inhibit means of the central unit a said alarm signal indicative of the alarm condition giving rise to the warning signal; and

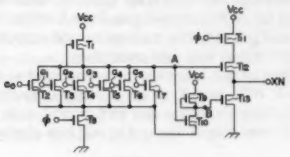
timer means arranged to prevent the first measuring means from causing the output circuit to output a said alarm signal during a predetermined period of time immediately following operation of said connector means to effect starting of the electric machine.

4,275,312
MOS DECODER LOGIC CIRCUIT HAVING REDUCED POWER CONSUMPTION

Tsuyoshi Saitou, Fuchu, and Tsuneo Ito, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 30, 1978, Ser. No. 964,894
Claims priority, application Japan, Dec. 9, 1977, 52-147089
Int. Cl.³ H03K *19/094, 19/20;* **G11C** *8/00*
U.S. Cl. 307—463 **11 Claims**

1. A transistor circuit wherein a MISFET for receiving desired signals through the gate and a first switching MISFET for receiving control signals through the gate are connected in series between a first reference potential terminal and an output terminal, a second MISFET for receiving said desired signals through the gate via an inverter consisting of a MISFET is connected between said output terminal and a second reference potential terminal, and a second switching MISFET

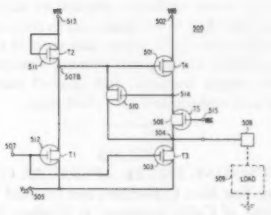


for receiving control signals through the gate is connected between said inverter circuit and said second reference potential terminal.

4,275,313
CURRENT LIMITING OUTPUT CIRCUIT WITH OUTPUT FEEDBACK

Harry J. Boll, Berkeley Heights, and Richard M. Goldstein, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 9, 1979, Ser. No. 28,115
Int. Cl.³ H03K *19/003, 19/094, 17/14, 19/20*
U.S. Cl. 307—448 **5 Claims**



1. A current limiting push-pull driver circuit comprising:

a first IGFET having its channel coupled between a first voltage conductor and an output node, the gate of the first IGFET being coupled to first input signal means, a second IGFET having its channel coupled between a second voltage conductor and a control node, the gate of the second IGFET being coupled to second input signal means complementary to the first, characterized in that there are included current sensing means coupled between the control node and the output node for producing a sensing voltage proportional to the current flowing between the second voltage conductor and the output node, and

regulating means coupled to the gate of the second IGFET responsive to the sensing voltage for altering the conductance of the second IGFET.

4,275,314
JOSEPHSON ATTO-WEBER SWITCH

Theodore A. Fulton, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 30, 1979, Ser. No. 34,569
Int. Cl.³ H03K *19/195, 19/20*
U.S. Cl. 307—462 **17 Claims**

1. A Josephson junction circuit comprising

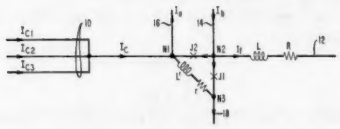
a Josephson junction gate capable of being switched between a low impedance state at $V=0$ and a high impedance state at $V\neq 0$,

bias electrode means (**14**) for applying primary bias current to said gate,

an output line (**12**) having an impedance connected to said gate,

control electrode means (**10**) for applying control current to said gate for switching said gate from $V=0$ to $V\neq 0$ and to divert said primary bias current to said output line, characterized in that said gate comprises

at least three circuit branches interconnected at three nodes (**N1, N2, N3**), said first node being connected to said control electrode means and said second node being connected to said output line and to said bias electrode means,



a first Josephson junction (**J1**) in the branch between said second and third nodes,

a second Josephson junction (**J2**) in the branch between said first and second nodes, and

a resistor (r) in the branch between said first and third nodes,

the critical currents of said junctions and said primary bias current (I_b) being mutually adapted to initially bias said junctions into their $V=0$ states and to sequentially switch said junctions to $V\neq 0$, when said control current (I_c) is applied, thereby causing said primary bias current to flow into said output line and said control current to flow through said resistor and said third node.

4,275,315

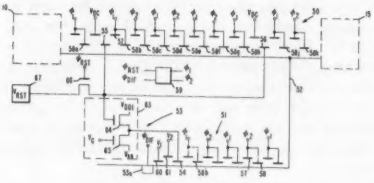
CHARGE SUMMING FILTER APERTURE CORRECTOR

Dale Maeding, San Juan Capistrano, and Michael Y. Pines, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 10, 1979, Ser. No. 83,424

Int. Cl.[3] **G11C** *19/28;* **H01L** *29/78, 27/14, 31/00*

U.S. Cl. 307—221 D **15 Claims**



1. In a charge coupled device (CCD) formed on a semiconductive layer transferring charge once every CCD clock period, an optically scanned monolithic focal plane array having a serial output register storing signal charge packets, a multiplexer and an on-chip charge summing aperture corrector, said charge summing aperture corrector comprising:

a main CCD charge flow channel in said semiconductive layer for a serially transferring charge packets from said serial register to said multiplexer in an order parallel to the direction optical scan;

a secondary CCD charge flow channel in said semiconductive layer for serially transferring supplementary charge packets in synchronism with charge flow in said main channel;

a summing node in said main channel intermediate said register and said multiplexer, said secondary channel merging with said main channel at said summing node; and

a charge controller comprising:

first electrode means in said main channel for sensing each of said signal charge packets; and,

charge injection means responsive to each of said signal charge packets sensed by said first electrode sensing means for effecting a reduction in said supplementary charge packets which arrive at said summing node at a first time, said first time displaced by a first interval from the time of arrival of successive ones of said signal charge packets at said summing node.

4,275,316

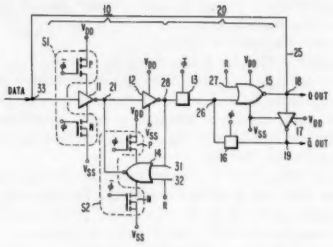
RESETTABLE BISTABLE CIRCUIT

William K. Knapp, Hillsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,020

Int. Cl.[3] **H03K** *3/286, 3/353*

U.S. Cl. 307—279 **4 Claims**



1. A resettable bistable circuit comprising:

first and second terminals for applying energizing potential thereto;

a third terminal for applying reset signal thereto;

a fourth terminal for receiving input signal;

first, second and third logical INVERTER circuits each having an input and an output terminal, and first and second supply terminals for applying respective relatively positive and relatively negative potentials thereto;

first and second NOR circuits each having first and second input terminals, on output terminal, and first and second supply terminals for applying respective relatively positive and relatively negative potentials thereto;

first and second transmission gates each having first and second input-output terminals and a control terminal;

means connecting the respective first supply terminals of the first NOR and first and second INVERTER circuits to said first terminal without substantially intervening impedance; means connecting the respective second supply terminals of the first NOR and first and second INVERTER circuits to said second terminal without substantial intervening impedance;

means connecting the first input-output terminals of the first and second transmission gates to the first input of the first NOR circuit;

means connecting the second input-output terminals of the first and second transmission gates to the output terminal of said first and second INVERTER circuits respectively;

means connecting the output terminals of the first and second NOR circuits to the respective input terminals of the first and second INVERTER circuits;

means connecting the input and output terminals of the third INVERTER circuit respectively to the fourth terminal and the input terminal of the second INVERTER circuit;

means connecting the output terminal of the second INVERTER to the first input of the second NOR circuit;

means connecting the second input terminals of the first and second NOR circuits to the third terminal; and

first and second switch means respectively, for selectively connecting the supply terminals of the third INVERTER and second NOR circuits to the first and second terminals for alternately energizing the third INVERTER and second NOR circuits at a frequency rate to be divided;

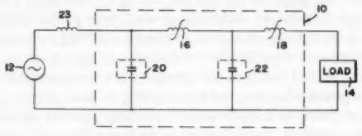
means for applying complementary signals to the control terminals of the first and second transmission gates so that the first transmission gate conducts when the third INVERTER is energized and the second transmission gate conducts when the second NOR is energized.

4,275,317

PULSE SWITCHING FOR HIGH ENERGY LASERS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; James B. Laudenslager, Sierra Madre, and Thomas J. Pacala, Los Angeles, both of Calif.

Filed Mar. 23, 1979, Ser. No. 23,485
Int. Cl.³ G11C *13/02*; H01J *3/10*
U.S. Cl. 307—415 **19 Claims**



1. A high speed pulse shaping switch for controlling energy from a high voltage, high impedance source to an electric discharge gas laser comprising:

a distributed capacitance energy storage means connected to said voltage source and said laser; and

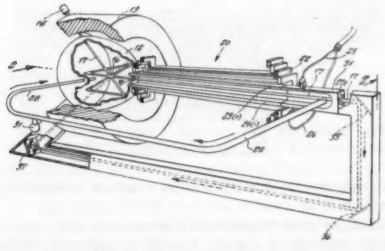
a saturable inductor switch means positioned in magnetically coupling relationship with respect to said storage means to control current from said storage means to said laser and chosen so that it will saturate when said voltage source output voltage reaches a predetermined level, thereby discharging energy contained in said distributed capacitance energy storage means into said laser.

4,275,318

MAGNETOHYDRODYNAMIC METHOD AND APPARATUS FOR CONVERTING SOLAR RADIATION TO ELECTRICAL ENERGY

Fred A. Duncan, 325 Hawthorne St., Brooklyn, N.Y. 11225

Continuation-in-part of Ser. No. 641,291, Dec. 16, 1975, abandoned. This application May 18, 1978, Ser. No. 907,277
Int. Cl.³ H02N *4/02*
U.S. Cl. 310—11 **7 Claims**



1. A process for converting radiative energy to electrical energy utilizing a MHD electrode system, comprising the steps of:

(a) forming a magnetic field for directing a concentration of charged particles through a MHD electrode system in a fully enclosed electrical energy generating system:

(b) supplying an ionizable working substance within said magnetic field;

(c) applying radiative energy to said ionizable substance in said magnetic field to produce moving charged particles from said working substance that are directed through said MHD electrode system to generate electrical energy, said radiative energy being focused and directed one or more times through the charged particle concentration;

(d) recycling the working substance passing through the MHD electrode system to step (b); and

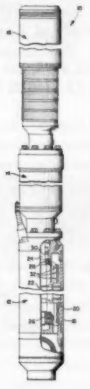
(e) recycling radiative energy passing through the MHD electrode system to step (c).

4,275,319

OIL-FILLED SUBMERGIBLE ELECTRIC PUMP MOTOR WITH IMPROVED STATOR WINDING INSULATION

Paul W. Davis, Jr., Dewey, Okla., assignor to TRW Inc., Cleveland, Ohio

Filed Jun. 1, 1979, Ser. No. 44,574
Int. Cl.³ H02K *1/04, 5/10*; F04B *17/00*
U.S. Cl. 310—43 **9 Claims**



1. In an oil-filled submergible electric pump motor, a stator structure with stator windings covered by a hydrolytically stable insulating layer comprising an addition polymer, the stator structure comprising an insulation system, including said layer, having a 50% probability of failure at 185° C. in water-saturated oil that is at least 50% greater than 432 hours.

4,275,320

RADIATION SHIELD FOR USE IN A SUPERCONDUCTING GENERATOR OR THE LIKE AND METHOD

Kai J. Baumann, Pittsburgh, and Sui-Chun Ying, Monroeville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

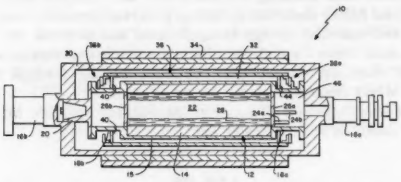
Filed May 11, 1978, Ser. No. 905,042
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—52 **11 Claims**

1. A radiation shield for use in a superconducting turbine generator or the like, said shield comprising:

(a) a cylindrical main body having opposite ends, an innermost surface extending from one end to the other and an outermost surface extending from one end to the other, said body including inner and outer concentric layers which engage one another along confronting internal surfaces;

(b) at least one internal groove located in one of said confronting internal surfaces, said groove defining an internal passage located entirely within said body and adapted to pass a fluid refrigerant therethrough;

(c) an entry passage extending through one of said layers and in fluid communication with one end of said groove for introducing said fluid refrigerant therein; and



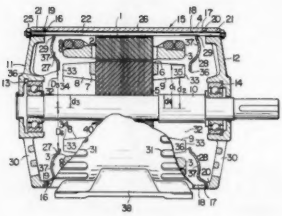
(d) an exit passage extending through one of said layers and in fluid communication with the other end of said groove for passing said refrigerant out of said body.

4,275,321

DRIP-PROOF TYPE ELECTRICAL ROTATING MACHINE

Koji Shimamoto, Chiba; Mitsuo Shimizu, Sakura, and Takao Yamashita, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1978, Ser. No. 936,132
Int. Cl.³ H02K *9/02*
U.S. Cl. 310—59 **5 Claims**



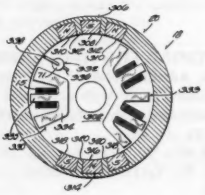
1. A drip-proof type electrical rotary machine comprising:
a housing;
a rotor core disposed in said housing;
a rotating shaft fixed integrally with said rotor core;
cooling fans disposed at both end sides of said rotor core for rotating with said rotating shaft;
a stator core disposed confronting said rotor core with a gap therebetween;
a frame for supporting said stator core so as not to be rotated and for rotatably supporting said rotating shaft, said frame including end brackets adapted to be disposed at respective sides of the stator core;
an air outlet disposed at the lower portion of said frame below said rotating shaft;
air inlets disposed at the lower portion of said end brackets below said rotating shaft and at both sides of said outlet;
air guides disposed in said housing between one of said air inlets and said air outlet and further between one of said cooling fan and said air inlet; and
an air passing hole formed in each of said air guides for surrounding said rotating shaft in such a way that a distance from a longitudinal center axis of said rotating shaft to an upper edge of said air passing hole located above said rotating shaft is less than a distance from the center axis of the rotating shaft to a lower edge of said air passing hole below said rotating shaft so that the upper edge of each air passing hole substantially prevents a drawn in air from backwardly flowing out therethrough and the lower edge permits an effective air suction through the air passing from the air inlets.

4,275,322

ROTARY PULSE GENERATOR

David T. Cavil, Menomonee Falls, and William R. Krueger, Hartford, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 883,914, Mar. 6, 1978. This application Apr. 2, 1979, Ser. No. 26,296
Int. Cl.³ H02K *39/00*
U.S. Cl. 310—211 **3 Claims**



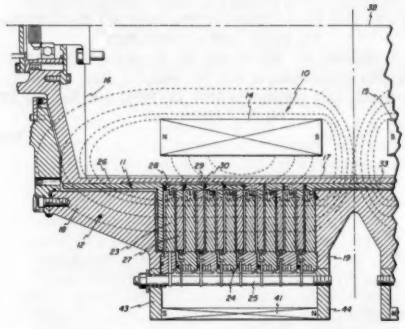
1. A rotary pulse generator including an armature having a two-magnet assembly including spaced pole pieces defining a pair of spaced gaps, an armature plate including a charge core and charge coil mounted thereon, and a trigger core and trigger coil mounted thereon, said trigger core being separate from said charge core but located in proximity to said charge core so that, at a given armature speed, said trigger coil produces a repeating series of trigger pulses including a first major voltage pulse of one polarity and of a major magnitude closely followed by a second minor voltage pulse of opposite polarity and of a minor magnitude substantially less than said major magnitude, said repeating series of trigger pulses being produced in response to said two-magnet assembly sequentially rotating past said trigger core and said charge core.

4,275,323

ACTIVE SHIELD FOR DISK-DRUM ACYCLIC MACHINE

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,869
Int. Cl.³ H02K *31/00*
U.S. Cl. 310—178 **10 Claims**



1. A high power density acyclic machine comprising in combination:
a plurality of main magnetic field generating coils, said coils being disposed in spaced, coaxial arrangement within a cryogenic dewar and adjacent ones of said coils being electrically connected to a power source to be in polar opposition;
a rotor comprising:
a hollow rotatable shaft, surrounding said main field generating coils and said dewar;

a plurality of radially-extending, electrically-conductive circular rotor disks rotatable with said shaft and mounted on said shaft in a plurality of axially-extending stacks radially outside said main field generating coils, each of said stacks of rotor disks being in axial alignment with one of said main field generating coils, respectively;

an electrically conductive cylindrical drum member disposed axially between an electrically connected to each axially adjacent pair of stacks of rotor disks;

a stator comprising:

a hollow fixed shielding member of low magnetic reluctance material concentric with and surrounding said rotatable shaft at each axial end of said shaft;

a plurality of axially extending stacks of radially-extending, electrically conductive circular stator disks, each said stack of stator disks being interleaved with one of said stacks of rotor disks, respectively;

a hollow sleeve of low magnetic reluctance material disposed between and connected to each axially adjacent pair of stacks of stator disks, concentric with and surrounding each said cylindrical drum member, said stator and said rotor being separated throughout by a gap;

a plurality of electrically conductive liquid metal current collectors interconnecting said interleaved disks and said drum member in a single series electrical connection; and

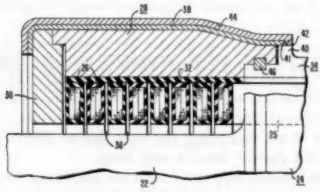
a plurality of active shielding coils disposed radially outside said stator, said shielding coils being disposed in a spaced, coaxial arrangement; each of said plurality of shielding coils being disposed in axial alignment with one of said plurality of main field generating coils, respectively; said shielding coils being electrically connected to a power source such that adjacent ones of said shielding coils are in polar opposition to each other, and in polar opposition with said respective one of said main field generating coils.

4,275,324

DYNAMOELECTRIC MACHINE HAVING SHIELDED RETAINING RINGS

Carl Flick, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 31, 1979, Ser. No. 71,632
Int. Cl.³ H02K *3/46, 3/48*
U.S. Cl. 310—270 **9 Claims**



1. A dynamoelectric machine comprising:

a cylindrical rotor body portion having a plurality of longitudinal slots disposed in its outer surface;

an electrical winding cooperatively associated with the rotor body, said winding comprising a plurality of conductors, said conductors including longitudinal portions disposed in said rotor slots and end turn portions connecting said longitudinal portions at both axial ends of the rotor body, said end turn portions extending axially beyond the rotor body;

a retaining ring structure joined to each axial end of said rotor body, each retaining ring structure being disposed about the conductor end turn portions to restrain radially outward movement thereof during rotor rotation;

two highly conductive mantle structures each having an inner surface and an outer surface, said mantle structures being individually disposed about each of the retaining ring structures such that said inner surface is in intimate electrical contact with said retaining ring; and

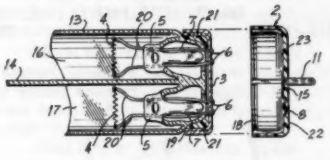
means for electrically connecting said mantle structure to said rotor surface, said electrical connecting means providing an electrical path separate from said retaining ring structure.

4,275,325

FLUORESCENT LAMP WITH PLURAL SEALED ENCLOSURES AND ELECTRICAL CONNECTOR THEREFOR

Raul Guim, 834 Venetia, Coral Gables, Fla. 33134

Filed Aug. 13, 1979, Ser. No. 66,128
Int. Cl.³ H01J *61/30, 61/36;* **H01R** *29/00, 33/76*
U.S. Cl. 313—51 **6 Claims**



1. In a fluorescent lamp of the type having a longitudinally hermetically sealed glass envelope containing a rarified atmosphere wherein the improvement comprises:

(a) a longitudinal divider inside said glass envelope defining a plurality of hermetically independent enclosures,

(b) a plurality of electrode assemblies each one attached to one end of each one of said enclosures,

(c) a pair of end caps each one attached to each end of said envelope and having a plurality of electrode terminals connected to said electrode assemblies,

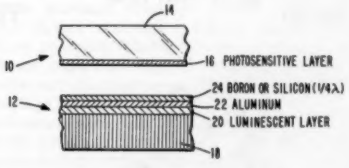
(d) a pair of end cap connectors removably attached to said end caps having a standard set of contact pins protruding through the outer wall of said connector capable of plugging in commercially available sockets and the inner wall having a set of contacts in alignment with said electrode terminals and electrically connected to said pins.

4,275,326

IMAGE INTENSIFIER TUBE WITH A LIGHT-ABSORBING ELECTRON-PERMEABLE LAYER

Johannes J. Houtkamp, Delft, Netherlands, assignor to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Division of Ser. No. 841,067, Oct. 11, 1977, Pat. No. 4,201,797.
This application Feb. 5, 1980, Ser. No. 118,690
Claims priority, application Netherlands, Oct. 20, 1976, 7611593
Int. Cl.³ H01J *29/28, 31/50*
U.S. Cl. 313—102 **3 Claims**



1. An image intensifier tube comprising a photocathode and an anode spaced from the photocathode wherein said anode includes

a light transparent substrate,

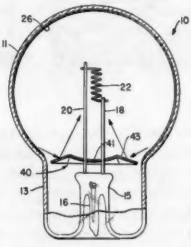
a layer of electron-responsive luminescent material on the light transparent substrate,
an aluminum film on the layer of luminescent material,
a light-absorbing electron-permeable layer of a low atomic weight meterial on the aluminum film,
said light-absorbing electron-permeable layer having a thickness of about one-fourth the average wave length of light impinging on the photocathode of the image intensifier tube, and
said low atomic weight material consisting of boron, silicon, or a compound of boron or silicon.

4,275,327

INCANDESCENT ELECTRIC LAMP WITHHEAT RECOVERY MEANS

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Oct. 30, 1978, Ser. No. 955,974
Int. Cl.³ H01K *1/32*
U.S. Cl. 313—111 **21 Claims**



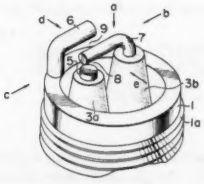
1. An incandescent electric lamp comprising:
an envelope;
a filament within said envelope, said filament producing energy in the visible range and in the infrared range when heated to incandescence,
means connected to and adapted to supply electrical energy to said filament to cause it to incandesce,
means on the wall of said envelope for reflecting infrared energy produced by the filament back thereto, a portion of the infrared energy reflected from the envelope wall forming a mode which circulates throughout the envelope in a path generally parallel to the envelope wall and is not returned to the filament, and
means for intercepting the infrared energy in the circulating mode and directing it to return to the filament.

4,275,328

SPARK PLUG HAVING INTERMEDIATE ELECTRODE AND NON-PARALLEL SERIES GAPS

Toshio Watanabe, Oobu, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 26, 1979, Ser. No. 15,437
Claims priority, application Japan, May 16, 1978, 53-58104
Int. Cl.³ H01T *13/46*
U.S. Cl. 313—123 **2 Claims**



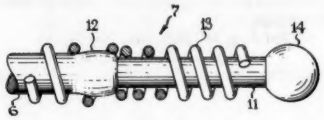
1. A spark plug for an internal combustion engine comprising a center electrode, a ground electrode, an intermediate electrode disposed between said center electrode and said ground electrode, a first air gap defined between said intermediate electrode and said center electrode to extend in a first direction, and a second air gap defined between said intermediate electrode and said ground electrode to extend in a second direction different from said first direction,
whereby when a high voltage is applied across said center electrode and said ground electrode, spark discharge occurs simultaneously in said first and second air gaps;
further comprising a supporting member of electrical insulator having a pair of leg portions partly protruding from a housing of metal material for fixedly supporting said center electrode in one of said leg portions, said ground electrode being bent into a J-like shape and fixed at one end to the end face of said housing, said intermediate electrode being also bent into a J-like shape and fixedly supported and isolated in the other of said leg portions of said supporting member, the end face of said center electrode being disposed opposite to an end-adjacent side portion of said J-shaped intermediate electrode to define said first air gap therebetween, and and end-adjacent side portion of said J-shaped ground electrode being disposed opposite to another end-adjacent side portion of said J-shaped intermediate electrode to define said second air gap therebetween;
said ground electrode and intermediate electrode being rod-shaped.

4,275,329

ELECTRODE WITH OVERWIND FOR MINIATURE METAL VAPOR LAMP

Elmer G. Fridrich, Chardon, and John M. Davenport, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,485
Int. Cl.³ H01J *17/06, 61/06*
U.S. Cl. 313—217 **7 Claims**



1. A high pressure metal vapor lamp arc tube comprising a fused silica envelope containing an ionizable fill including vaporizable metal, self-heating electrodes sealed into opposite ends of said envelope, at least one of said electrodes comprising a tungsten shank exceeding the wire size at which melt-back occurs at the current level in said lamp,
said shank being supported by a molybdenum inlead sealed into the envelope and having a weld knot to which said shank is joined
and an open overwind of fine wire fitting loosely on said shank and retained in place by frictional engagement with the enlargement in the inlead at the weld knot.

4,275,330

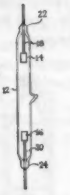
ELECTRIC DISCHARGE LAMP HAVING A CATHODE WITH CESIUM METAL OXIDE

Chong I. Cho, Mayfield Heights; Edward C. Zukowski, Mentor, and Dimitri M. Speros, Painesville, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,570
Int. Cl.³ H01J *1/14, 61/06*
U.S. Cl. 313—218 **9 Claims**

1. A cathode comprising a porous sintered body of refractory metal and a first electron emissive material selected from

barium aluminate and barium tungstate, said cathode having Cs_2MO_4 as a second electron emissive material dispersed in the pores of said porous sintered body and wherein M is a refractory metal.



4,275,331

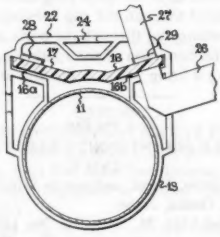
FLUORESCENT LAMP UNIT

Kurt O. Stresing, East Cleveland, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 20, 1979, Ser. No. 59,281

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 **3 Claims**



1. A lamp unit comprising an elongated lamp bulb, a pair of plastic end caps positioned respectively at the ends of said bulb and each having a groove therein at the inner end thereof whereby said grooves face each other, and a plastic support strip extending alongside said lamp bulb and into said grooves of the end caps, at least one of said end caps being provided with at least one integral tab extending toward the other end cap and alongside one or more surface areas of said support strip, said tabs being ultrasonically welded to said support strip.

4,275,332

IN-LINE ELECTRON GUN

Shigeya Ashizaki, Takatsuki; Hideo Muranishi, Osaka, and Koichi Sugahara, Sakai, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

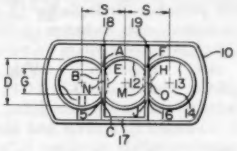
Filed Jul. 19, 1979, Ser. No. 58,919

Claims priority, application Japan, Jul. 25, 1978, 53-91134; Mar. 20, 1979, 54-32780; Mar. 27, 1979, 54-36082

Int. Cl.³ H01J *29/50*

U.S. Cl. 313—414 **9 Claims**

1. An in-line electron gun characterized in that an elongated aperture is formed through each of the walls in predetermined spaced and opposed relationship of a focusing electrode, which form main lenses, respectively, and a final accelerating electrode; said elongated aperture consists of a center or inner aperture and two outer apertures which are partially overlapped and consequently contiguous with said center or inner aperture through two neck portions, respectively; and said elongated aperture is divided by a partition electrode means at said two neck portions into three apertures through which the three electron beams pass, respectively.



4,275,333

FLUORESCENT COMPOSITIONS AND LOW-VELOCITY ELECTRON EXCITED FLUORESCENT DISPLAY DEVICES UTILIZING THE SAME

Akiyasu Kagami, Kanagawa, and Yoshinori Tanigami, Odawara, both of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka and Japan Electric Industry Development Association, Tokyo, both of, Japan

Filed Feb. 21, 1979, Ser. No. 13,430

Claims priority, application Japan, Feb. 20, 1978, 53-18337; Mar. 22, 1978, 53-32491; Mar. 22, 1978, 53-32492; Mar. 22, 1978, 53-32493

Int. Cl.³ H01J *29/20;* **C09K** *11/50*

U.S. Cl. 313—495 **46 Claims**

1. A low-velocity electron excited fluorescent display device comprising a sealed evacuated tube, an anodic plate enclosed in said tube having a fluorescent screen on one side thereof, and a cathode enclosed in said tube standing face to face with said fluorescent screen and emitting electrons which impinge upon said fluorescent screen and excite said fluorescent screen, wherein said fluorescent screen is composed of

a fluorescent composition consisting essentially of a mechanical mixture of a conductive material selected from the group consisting of indium oxide (In_2O_3), zinc oxide (ZnO), stannic oxide (SnO_2), titanium dioxide (TiO_2), tungsten oxide (WO_3), niobium pentoxide (Nb_2O_5), cadmium sulfide (CdS), copper sulfide (Cu_2S) and mixtures thereof, said conductive material having a particle diameter distribution wherein the median value is within the range of 2.5 to 14μ and standard deviation ($\log \sigma$) is not more than 0.7, and a phosphor selected from the group consisting of a blue emitting phosphor, a green emitting phosphor, a red emitting phosphor and a yellow emitting phosphor in a mixing weight ratio ranging from 1:99 to 1:4,

said blue emitting phosphor being selected from the group consisting of a silver activated zinc sulfide phosphor (ZnS:Ag), a silver and aluminium activated zinc sulfide phosphor (ZnS:Ag,Al), a silver activated zinc sulfoselenide phosphor [Zn(S,Se):Ag], a silver and aluminium activated zinc sulfoselenide phosphor [Zn(S,Se):Ag,Al], a cerium activated yttrium silicate phosphor (Y_2SiO_5:Ce), a cerium activated strontium gallium sulfide phosphor ($SrGa_2S_4$:Ce), a cerium activated calcium magnesium silicate phosphor (Ca_2MgSiO_5:Ce), a titanium activated calcium magnesium phosphor [$(Ca,Mg)_2SiO_4$:Ti], an europium activated barium magnesium aluminate phosphor [$(Ba,Mg)O_2.6Al_2O_3:Eu^{2+}$], an europium activated strontium barium phosphate phosphor, [$(Sr,Ba)_3(PO_4)_2:Eu^{2+}$], an europium activated calcium chloroborate phosphor ($Ca_2B_5O_9Cl:Eu^{2+}$) and mixtures thereof,

said green emitting phosphor being selected from the group consisting of a manganese activated zinc silicate phosphor (Zn_2SiO_4:Mn), a manganese and arsenic activated zinc silicate phosphor (Zn_2SiO_4:Mn,As), a terbium activated rare earth oxysulfide phosphor (Ln_2O_2S:Tb, wherein Ln

is at least one element selected from the group consisting of Y, Gd, Lu and La), a cerium activated yttrium aluminium gallium oxide phosphor [$Y_3(Al_{1-a},Ga_a)_5O_{12}$:Ce, wherein a is $0 \leqq a \leqq 0.5$], an europium activated strontium gallium sulfide phosphor ($SrGa_2S_4:Eu^{2+}$), a copper and aluminium activated zinc cadmium sulfide phosphor [$(Zn_{1-b},Cd_b)S$:Cu,Al, wherein b is $0 \leqq b \leqq 0.1$], a copper activated zinc cadmium sulfide phosphor [$(Zn_{1-c},Cd_c)S$:Cu, wherein c is $0 \leqq c \leqq 0.1$], a silver activated zinc cadmium sulfide phosphor [$(Zn_{1-d},Cd_d)S$:Ag, wherein d is $0.3 \leqq d \leqq 0.5$], a silver and aluminium activated zinc cadmium sulfide phosphor [$(Zn_{1-e},Cd_e)S$:Ag,Al, wherein e is $0.2 \leqq e \leqq 0.5$] and mixtures thereof,

said red emitting phosphor being selected from the group consisting of an europium activated rare earth oxysulfide phosphor (Ln_2O_2S:Eu, wherein Ln has the same definition as described above), an europium activated rare earth oxide phosphor (Ln_2O_3:Eu, wherein Ln has the same definition as described above), an europium activated rare earth vanadate phosphor ($LnVO_4$:Eu, wherein Ln has the same definition as described above), an europium activated rare earth borate phosphor ($LnBO_3$:Eu, wherein Ln has the same definition as described above), an europium activated rare earth phosphate phosphor ($LnPO_4$:Eu, wherein Ln has the same definition as described above), a silver activated zinc cadmium sulfide phosphor [$(Zn_{1-f},Cd_f)S$:Ag, wherein f is $0.65 \leqq f \leqq 0.9$], a manganese activated zinc phosphate phosphor [$Zn_3(PO_4)_2$:Mn], a manganese activated cadmium borate phosphor ($Cd_2B_2O_5$:Mn) and mixtures thereof, and

said yellow emitting phosphor being selected from the group consisting of a copper activated zinc sulfoselenide phosphor [$Zn(S_{1-g},Se_g)$:Cu, wherein g is $0.05 \leqq g \leqq 0.6$], a copper and aluminium activated zinc sulfoselenide phosphor [$Zn(S_{1-h},Se_h)$:Cu,Al, wherein h is $0.05 \leqq h \leqq 0.6$], a silver activated zinc cadmium sulfide phosphor [$(Zn_{1-i},Cd_i)S$:Ag, wherein i is $0.5 < i \leqq 0.7$], a silver and aluminium activated zinc cadmium sulfide phosphor [$(Zn_{1-j},Cd_j)S$:Ag,Al, wherein j is $0.5 < j \leqq 0.7$], a gold and aluminium activated zinc cadmium sulfide phosphor [$(Zn_{1-k},Cd_k)S$:Au,Al, wherein k is $0 \leqq k \leqq 0.2$], a copper activated zinc cadmium sulfide phosphor [$(Zn_{1-l},Cd_l)S$:Cu, wherein l is $0.1 < l \leqq 0.2$], a copper and aluminium activated zinc cadmium sulfide phosphor [$(Zn_{1-m},Cd_m)S$:Cu,Al, wherein m is $0.1 < m \leqq 0.2$], lead and manganese activated calcium silicate phosphor ($CaSiO_3$:Pb,Mn) and mixtures thereof.

4,275,334

INTEGRAL SPARK PLUG COIL FOR AIRCRAFT-TYPE PLUG

Bruce R. Beeghly, Youngstown, Ohio, assignor to The Economy Engine Company, Youngstown, Ohio

Filed Oct. 18, 1979, Ser. No. 85,897
Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*
U.S. Cl. 315—57 **5 Claims**

1. In an ignition device comprising a step-up coil unit to be associated with an aircraft-type spark plug having a barrel extending up from the shell of the spark plug with threads on the portion of the barrel away from the shell, the improvement comprising said step-up coil unit comprising

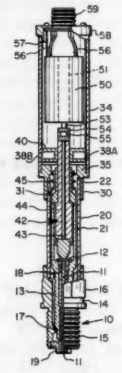
a tubular metal sleeve having threads for engaging the threads on the barrel of the spark plug, said sleeve defining a radial flange,

an insulating bushing having a hub-like configuration arranged substantially coaxial with the sleeve such that a face of the bushing is adjacent the radial flange of the sleeve, and

a coil canister sealed to said sleeve having said bushing and a step-up coil contained therein and there being at least one port in the side of the canister adjacent the bushing,

a rigid lead journaled in the bushing for completing the electrical circuit between the coil secondary and the spark plug,

the space between the radial flange and the bushing defining a narrow annular gap sized to quench a flame attempting to propagate therethrough,



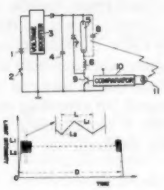
whereby upon leakage of the seals in the spark plug pressure does not build up in the spark plug barrel and coil canister but is released through the gap between the radial flange and the bushing and through the ports in the canister and whereby the condition of the spark plug can be checked by inserting a firing probe in the said at least one port.

4,275,335

CONSTANT LIGHT INTENSITY ELECTRONIC FLASH DEVICE

Tokuji Ishida, Daito, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 26, 1980, Ser. No. 134,297
Claims priority, application Japan, Mar. 28, 1979, 54-37270
Int. Cl.³ H05B *41/32*
U.S. Cl. 315—241 P **12 Claims**



1. An electronic flash device comprising:

an electronic flash tube for emitting flash light;

a main capacitor for storing electric energy for energizing said flash tube;

an inductor means;

a switching means, said inductor means and said switching means being connected in series with said flash tube across said main capacitor;

a diode connected across said series connected flash tube and said inductor means, with a polarity opposite to the direction of energy supply from said main capacitor to said flash tube;

means for monitoring the intensity of the light emitted from said flash tube; and

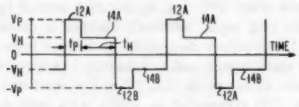
means for controlling said switching means in accordance with the light intensity monitored by said monitor means such that said light intensity is maintained substantially constant.

4,275,336

METHOD OF IMPROVING THE MEMORY EFFECT AND BRIGHTNESS OF AN ALTERNATING CURRENT EXCITED THIN FILM ELECTROLUMINSCENT DEVICE

Vincent Marrello, San Jose; Aare Onton, Saratoga, both of Calif., and Wolfgang Rühle, Stuttgart, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1979, Ser. No. 974,180
Int. Cl.[3] H05B *33/08*
U.S. Cl. 315—246 7 Claims



1. A method of improving an AC excited thin film electroluminescence device comprising the steps of

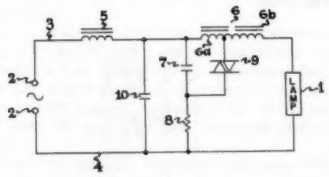
applying a hybrid waveform excitation to said device, said hybrid waveform having a first voltage level portion for carrier generation and a second voltage level portion lower than said first level for charge collection and holding purposes only.

4,275,337

STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

David W. Knoble, East Flat Rock, and Thomas A. Crane, Asheville, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,865
Int. Cl.[3] H05B *37/00, 41/00*
U.S. Cl. 315—289 12 Claims



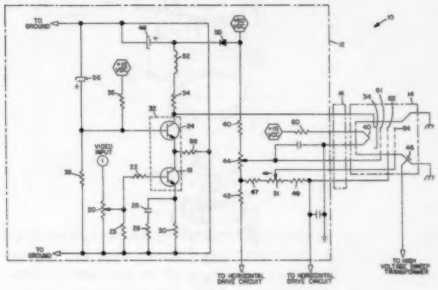
1. A starting and operating circuit for gaseous discharge lamps comprising, in combination, a source of alternating current, ballast induction means connected at its input side to said alternating current source, pulse transformer means connected in series to the output of said ballast induction means, discharge lamp means connected at one side to the output of said pulse transformer means, and at the other side to said alternating current source, storage capacitor means connected to the junction of said ballast induction means and said pulse transformer means across said alternating current source, said pulse transformer means comprising a magnetic core formed with at least one gap therein and induction coil means on said magnetic core, high voltage starting means including a portion of said induction coil means for providing a high voltage starting pulse on said discharge lamp means, the ratio L/C, where L is the inductance of said pulse transformer means and C is the capacitance of said storage capacitor means, being less than about 64,000 ohms[2].

4,275,338

ANTI-SPOT BURN PROTECTION FOR CRT

Wayne Grocki, Libertyville, and Richard J. Steinmetz, Elk Grove Village, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 19, 1979, Ser. No. 76,885
Int. Cl.[3] H01J *29/52*
U.S. Cl. 315—381 6 Claims



1. In a video display apparatus including a cathode ray tube having a plurality of electron beam control grid electrodes including a cathode and a brightness control grid electrode, video signal amplification means for coupling a video input signal to said cathode, a high voltage power supply for energizing said video signal amplification means and said brightness control grid electrode, a protection system comprising:

a low voltage source coupled to said video signal amplification means for proper biasing of said video signal amplification means, said low voltage source having a higher rate of decay than said high voltage power supply following the removal of power from said video display apparatus;

unidirectional conducting means for coupling said high voltage power supply to said video signal amplification means; and

capacitor means coupling said unidirectional conducting means to ground reference potential, said capacitor means being charged by said high voltage power supply by means of said unidirectional conducting means and coupled to said video signal amplification means for energizing said video signal amplification means upon discharge thereof, thereby maintaining a pre-determined decay voltage differential between said cathode and said brightness control grid electrode to prevent cathode ray tube turn-on following the removal of power from said video display apparatus.

4,275,339

BIFILAR BRUSHLESS DC MOTOR

Michael J. Burke, and David W. Collins, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,201
Int. Cl.[3] H02P *6/02*
U.S. Cl. 318—138 5 Claims

1. A brushless D.C. motor including a stator element and a rotor element comprising:

a plurality of bifilar winding wire pairs,

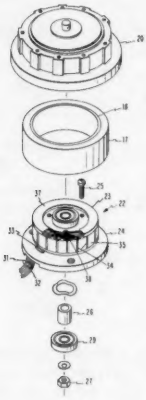
a series of angularly spaced dual windings mounted on said stator with each successive dual winding formed by coiling a different winding wire pair, whereby each winding wire pair forms a plurality of angularly spaced dual windings mounted on said stator in angular spaced positions and separated by dual windings formed by a different winding wire pair,

each said dual winding being formed of two bifilar wound subwindings which overlap one another and have sub-

winding axes separated by an angle approximately half the angular separation between axes of symmetry of adjoining dual windings,

means connecting each windings in parallel to a potential source,

switch means in each winding circuit for energizing the associated winding,



diode means in each winding circuit, each respectively connected in parallel with said switch means to permit a reverse flow of current through the associated winding that bypasses said switch means, and

means for sequentially energizing said windings in such manner that at any stage of the sequence the next previous winding energized and the next subsequent winding energized is formed from a different winding wire pair.

4,275,340

CONTROL CIRCUIT FOR A FINAL CONTROL ELEMENT, IN PARTICULAR AN ELECTRIC MOTOR

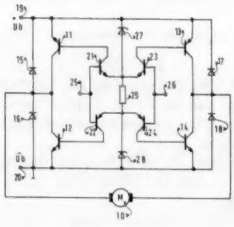
Richard Schleupen, Ingersheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,123

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843622

Int. Cl.³ H02P *1/22*

U.S. Cl. 318—280 **4 Claims**



1. A control circuit for a servomotor (**10**) including a bridge circuit comprising

positive and negative supply terminals (**19, 20**);

four semiconductor elements (**11, 12, 13, 14**), respective pairs (**11/12; 13/14**) of said semiconductor elements defining serially connected longitudinal bridge branches connected across the supply terminals, said servomotor (**10**) being connected in a diagonal across said longitudinal bridge branches;

each of said semiconductor elements (**11, 12, 13, 14**) being controlled by connection to an input transistor (**21, 22, 23, 24**), pairs of said input transistors (**21/22; 23/24**) being connected to one of two control input terminals (**25, 26**) to control, when differing signals of a first type are applied to said input terminals, a first semiconductor element (**11**) in one of said longitudinal bridge branches to become conducting while a second element (**12**) becomes non-conducting, and a first semiconductor element (**13**) of the other longitudinal branch to become non-conducting, while the second (**14**) becomes conducting and causing current to flow through diagonally positioned branches of the bridge, and through said servomotor in a first direction, and when differing signals of a second type are applied to said input terminals current is caused to flow through oppositely diagonally positioned branches of the bridge and through said servomotor in a second direction;

at least one Zener diode (**27, 28**) and at least one low-value resistor (**29**) connected in series with said at least one Zener diode;

wherein the emitters of one pair (**21, 22**) of said input transistors are connected to diagonally positioned emitters of the second pair (**23, 24**) of said input transistors through said at least one low-value resistor;

and wherein the emitters of one pair of the input transistors are connected to emitters of the corresponding transistors of the second pair (**23, 24**), and one junction of two emitters of two corresponding transistors (**21, 23**) is connected to one supply terminal (**19**) through the at least one Zener diode (**27**),

and the other junction of the emitters of two other corresponding input transistors (**22, 24**) is connected to the other supply terminal (**20**).

4,275,341

ELECTRONIC POWER SUPPLY CIRCUIT FOR A SERIES CONNECTED DC MOTOR

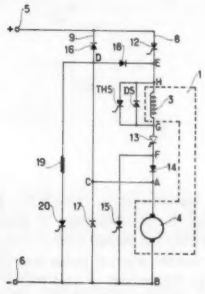
André Huber, Le Vésinet; Alain Muller, Chilly-Mazarin, and Jacques Soffer, Sceaux, all of France, assignors to Alsthom-Atlantique, Paris, France

Filed Dec. 19, 1979, Ser. No. 105,336

Claims priority, application France, Dec. 22, 1978, 78 36138

Int. Cl.³ H02P *3/14*

U.S. Cl. 318—376 **2 Claims**



1. An electronic circuit for supplying current from a source of electricity to a series-excitation DC motor, said DC motor including a field winding and an armature, said circuit comprising between a positive terminal (**5**) and a negative terminal (**6**) of said source of electricity:

a first branch circuit (**8**) which includes, in series, a traction thyristor (**12**), the field winding (**3**) of said motor, a main chopper (**13**), a traction diode (**14**), the armature (**4**) of said motor, and wherein said winding has, in parallel with its terminals a first free-wheeling diode (DS) and a shunt thyristor (THS) connected in a head to tail configuration, and wherein a braking thyristor (**15**) is in parallel with

traction diode (14) and said armature (4) and the anodes of said traction and shunt thyristors (12, THS), of said chopper (13) and of the traction diode (14) face said positive terminal (5); and

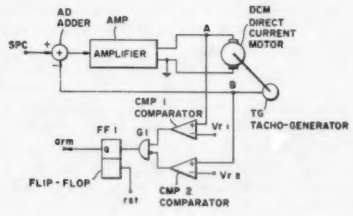
a second branch circuit (9) which includes, in series, a regeneration diode (16) and a second free-wheeling diode (17), and wherein the cathodes of said regeneration diode (16) and of said free-wheeling diode (17) face said positive terminal (5), and wherein the anode of the regeneration diode (16) is connected firstly to the cathode of said traction diode (14) and secondly to an anode of a braking diode (18) and wherein the cathode of said braking diode (18) is connected to the cathode of said traction thyristor (12).

4,275,342

ABNORMALITY DETECTING SYSTEM FOR DC MOTOR CONTROL APPARATUS

Shigeki Kawada, Hino; Katsuo Kobari, Tachikawa, and Hiroshi Ishida, Hamura, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 95,077
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—490 **4 Claims**



1. An abnormality detecting system for a DC motor control apparatus in which a DC motor is driven in accordance with a signal corresponding to the difference between a revolving speed signal from a speed detector coupled with the DC motor and a command speed signal for driving the DC motor at a revolving speed indicated by the command speed signal, said system comprising

determining means for determining the normality of the operation of the DC motor control apparatus to be normal comprising a first comparator for comparing the voltage to the DC motor with a first reference voltage and a second comparator for comparing the revolving speed signal from the speed detector with a second reference voltage,

said determining means for determining said operation of the DC motor control apparatus comprising means for determining said operation to be normal when the logic outputs from the first and second comparators are equal to each other, and means for determining said operation of the DC motor control apparatus to be abnormal when the logic outputs from the first and second comparators are different from each other.

4,275,343

BACK EMF CONTROLLED PERMANENT MAGNET MOTOR

Donald E. Fulton, Stoneham, and William P. Curtiss, Winthrop, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Dec. 28, 1978, Ser. No. 973,860
Int. Cl.³ H02P *7/36, 5/28*
U.S. Cl. 318—721 **17 Claims**

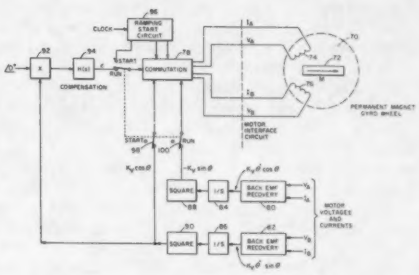
1. A permanent magnet A.C. motor system comprising:

a permanent magnet motor having a stator and rotor, one of which includes a permanent magnet and the other of which includes electrically excitable plural windings for generating a varying magnetic field relative to said windings;

means for applying A.C. excitation to said windings;

means for continuously sensing the A.C. back EMF developed in said windings during the powering thereof as a function of both winding resistance and winding inductance in response to the excitation applied thereto;

means for controlling the phase angle between the applied excitation and sensed back EMF to provide maximum torque.

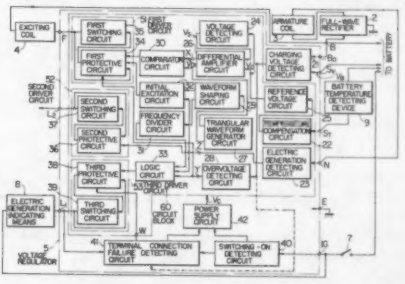


4,275,344

VOLTAGE CONTROL APPARATUS FOR ELECTRIC GENERATORS FOR VEHICLES

Kazumasa Mori, Aichi; Taro Asahi, Chiryu; Keiichiro Banzai, Toyota; Katsutaro Iwaki, Chiryu; Katsuya Muto, Kariya; Akira Mase, Handa; Takayasu Nimura, Nagoya; Katsumi Itoh, Oobu, and Yoshio Akita, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 6, 1979, Ser. No. 73,243
Claims priority, application Japan, Sep. 8, 1978, 53-110874
Int. Cl.³ H02P *9/30*
U.S. Cl. 322—28 **11 Claims**



1. A voltage control apparatus for electric generators for vehicles comprising:

an electric generator having an armature winding, an exciting coil and a rectifier for rectifying an a.c. output from said armature winding;

a battery charged by a d.c. output from said rectifier;

a voltage detecting circuit detecting a generated voltage of said electric generator or a charging voltage of said battery and producing an output detected voltage;

a reference voltage circuit for generating a reference voltage representing a desired value for a battery voltage to be regulated;

a differential amplifier circuit receiving the output detected voltage from said voltage detecting circuit and the refer-

ence voltage from said reference voltage circuit as input signals thereto and producing a difference voltage obtained by difference amplification;

a triangular waveform generator circuit generating a triangular waveform voltage within a predetermined range of swing and at constant periods;

a comparator circuit receiving the difference voltage from said differential amplifier circuit and the triangular waveform voltage from said triangular waveform generator circuit, comparing the two voltages with each other, and producing an output signal;

a first driver circuit for energizing said exciting coil in response to the output signal from said comparator circuit; and

an initial excitation circuit for forcibly causing an oscillation signal for initial excitation to be generated and supplying the oscillation signal to said first driver circuit to make said first driver circuit supply an initial exciting current to said exciting coil during a time interval from the start of said electric generator to the arrival thereof at a predetermined condition of electric generation.

4,275,345

A.C. IMPEDANCE MEASURING CIRCUIT WITH THERMALLY CONTROLLED RESISTIVE ELEMENT

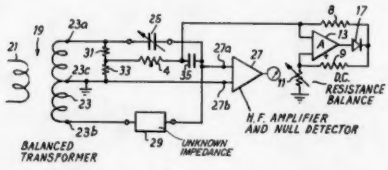
David A. G. Tait, 34 Mount St., Dorking, Surrey, England

Filed Oct. 23, 1978, Ser. No. 953,862

Claims priority, application United Kingdom, Nov. 9, 1977, 46717/77

Int. Cl.³ G05F 5/00; G01R 27/02

U.S. Cl. 323—363 **10 Claims**



1. An a.c. impedance measuring circuit comprising a first, a.c. bridge circuit including a transformer having a primary winding and a tapped secondary winding wherein the two parts of the secondary winding form two arms of said bridge circuit, a variable resistance element in a third arm of said bridge circuit and having a resistance value which varies in dependence upon its temperature, a fourth arm of the bridge circuit being adapted to be coupled to a device having an impedance to be measured, and a second, d.c. circuit including a source of direct current coupled to said resistance element to provide a direct current to heat said resistance element, means for varying the magnitude of said direct current to control the temperature of said resistance element for setting its resistance value to the value required to balance the in-phase component of impedance of the device to be measured by the a.c. bridge circuit, and means responsive to said variable resistance element for giving an indication of the value to which said resistance element has been set, the direct current and the resistance responsive means having substantially no effect on the operation of the a.c. bridge circuit other than the setting of the resistance value of said element.

4,275,346

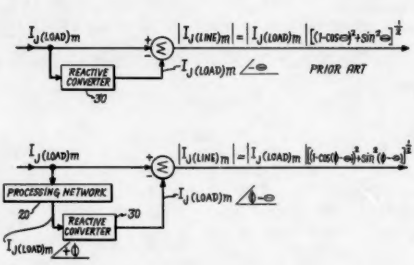
STATIC VAR SYSTEM WITH MEANS FOR CORRECTING FOR NEGATIVE PHASE SHIFT

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 3, 1979, Ser. No. 99,697

Int. Cl.³ H02J 3/18

U.S. Cl. 323—210 **5 Claims**



1. Reactive current supply apparatus for an a-c electric power system including a critical voltage supply bus electrically separated by series impedance from load terminals which are adapted for connection to a load subject to rapid oscillatory variation of reactive current demand comprising: fixed capacitor means connected across said load terminals, fixed inductor means connected across said load terminals in series circuit relation with static switching means, said static switching means including gating means for phase controlling the conduction angle of said switching means thereby to control the magnitude of reactive current traversing said inductor means; means for developing a first electrical signal representative of the magnitude and polarity of the reactive load current coefficient at said load terminals, second means responsive to said first electrical signal for so controlling said gating means for determining the sum of the reactive current traversing said fixed capacitor means and said fixed inductor means, which further comprises:

means for receiving said first electrical signal and developing a first intermediate electrical signal of substantially the same frequency as said first electrical signal but having a predetermined positive phase shift relation thereto, said second means being responsive to said first intermediate electrical signal.

4,275,347

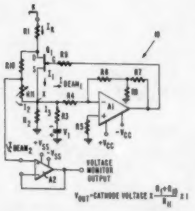
PRECISION CATHODE CURRENT REGULATOR

Felta C. Farmer, Jr., Gas City, and Donald P. Knight, Marion, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,387

Int. Cl.³ G05F 3/08

U.S. Cl. 323—312 **7 Claims**



1. A precision cathode current regulator for controlling cathode current in a cathode-ray tube comprising

a field effect transistor connected between a cathode-ray

tube cathode and a node, the source of said transistor being connected to the node, said node being connected to ground through a resistor,

an operational amplifier having a first input connected through a resistor to said node, the output of said operational amplifier being connected through a resistor to the gate of said field effect transistor, a second input of said operational amplifier being connected to ground through a resistor, the output of said operational amplifier further being connected to the first input through two series resistors and having another resistor connecting a point between the two series resistors to ground,

means for measuring cathode voltage, and

means for offsetting the regulated current to compensate for current entering the means for measuring cathode voltage.

4,275,348

METHOD OF AND SYSTEM FOR MEASURING THE TRANSMISSION CHARACTERISTICS OF FOUR-TERMINAL NETWORKS

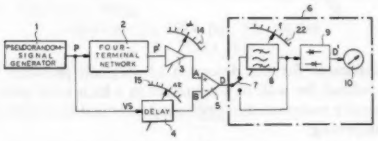
Herbert Bayer, Reutlingen; Günther Hoffmann, and Eberhard Schuon, both of Eningen, all of Fed. Rep. of Germany, assignors to Wandel & Goltermann, Eningen, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,759

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803608

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 R **20 Claims**



1. A method of measuring the transmission characteristics of a four-terminal network, comprising the steps of:

feeding a multifrequency test signal to the input of the four-terminal network and receiving a distorted signal from the output thereof;

supplying said distorted signal and a comparison signal substantially identical with said test signal to respective inputs of a comparator for producing a difference signal;

varying the amplitude ratio and the relative timing of said distorted and comparison signals to minimize the average amplitude and phase distortions of all frequency components thereof until said difference signal has a minimum magnitude; and

registering said minimum magnitude as a measure of non-compensable residual distortions along with the amplitude ratio and relative time lag producing said minimum magnitude.

4,275,349

WATT AND VAR TRANSDUCER

Joseph T. Wintermute, Mountainside, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1979, Ser. No. 38,362

Int. Cl.³ G01R *21/00*

U.S. Cl. 324—141 **8 Claims**

1. A watt and var transducer, comprising:

means providing a first voltage signal,

means phase shifting the first voltage signal by 90° to provide a second voltage signal,

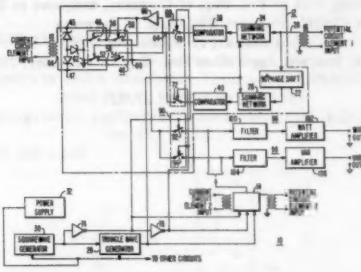
means providing a triangle wave signal,

means providing first and second pulse width modulated signals in response to said first and second voltage signals, respectively, and to said triangle wave signal,

means providing a current signal,

means alternately modulating the current signal in response to said first and second pulse width modulated signals, to provide first and second modulated current signals, respectively,

first and second output circuits each including filter and amplifier means,



and means applying the first and second modulated current signals to the first and second output circuits, respectively, to simultaneously provide both watt and VAR measurements.

4,275,350

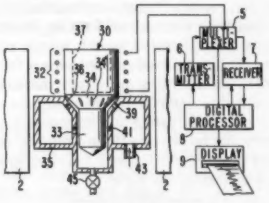
SAMPLE SPINNING MECHANISM FOR NMR PROBES

Howard D. W. Hill, and Ulrich Huber, both of Cupertino, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 29, 1979, Ser. No. 42,821

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—321 **4 Claims**



1. An NMR spectrometer for analysis of a sample comprising polarizing magnetic field means for impressing precessive motion upon sample quantum systems, RF probe means for excitation of resonance in said precessive motion in combination with an RF source means and said probe means for detection of said resonance in combination with RF detection means and sample spinner means for rotating said sample in said magnetic field, the improvement comprising

an air bearing supported turbine for spinning a sample at high rotational frequencies in a volume region of controlled magnetic field, said turbine comprising a rotor and a stator for housing said rotor, the improvement wherein

said rotor comprises a portion of a frusto-conical shaped member located intermediate a first cylindrical portion of first diameter and a second cylindrical portion of smaller diameter than said first diameter,

a stator for housing said rotor, said stator having a tapered portion for receiving said frusto-conical rotor portion and a cylindrical portion for receiving said second cylindrical portion,

a first set of jets in said tapered portion of said stator for levitating said rotor,

a second set of jets in said cylindrical portion of said stator for maintaining alignment of said rotor axis with the axis of said cylindrical portion of said stator, and

said rotor further comprising means for deriving rotational motion from at least one of said set of jets.

4,275,351

ARRANGEMENT FOR MONITORING BATTERIES

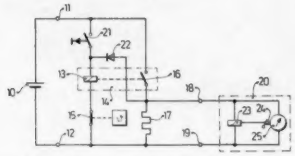
Helmut Härer, Remseck, and Josef Juhasz, Vaihingen/Enz-Rosswag, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,683

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2801027

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—427 **14 Claims**



1. An arrangement for monitoring batteries, particularly for ascertaining the remaining capacity of batteries for electrical vehicles, comprising, in combination, two battery-connection terminals for connection to a battery; electrical metering means having electrical input means for receipt of an electrical signal to be metered; load resistor means; connecting means for connecting said electrical input means in circuit with said battery-connection terminals, and including timing switch means operative when activated for connecting said load resistor means in circuit with said battery-connection terminals for a time interval to cause a definite discharge current to be drawn by said load resistor means from said battery connection terminals for said time interval, said timing switch means including temperature-responsive switch means responding to the heat generated by said load resistor means for terminating said time interval; and arresting means automatically operative at the end of said time interval for arresting the operation of said metering means and causing said metering means to persistently hold the value most recently metered by said metering means, this held metered value then serving as an indication of the remaining capacity of the battery.

4,275,352

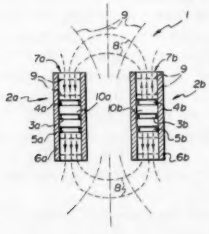
SEA WATER CONDUCTIVITY CELL

Robert B. Sudar; Edward L. Lewis, and Albert W. Koppel, all of Victoria, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Mar. 5, 1979, Ser. No. 17,731

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—449 **9 Claims**



1. A conductivity cell comprising:

support means having two separate electrode wells, each well being open at both ends and having electrically non-conductive interior walls; and

first, second and third electrodes spaced sequentially within each well, the first and third electrodes in each well being interconnected for connection to a current source whereby current flow between the wells produces a detectable potential between the second electrodes.

4,275,353

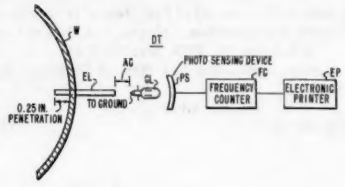
METHOD AND APPARATUS FOR THE DETECTION OF STAGNANT REGIONS IN A FLUIDIZED BED OR IN PNEUMATIC CONVEYING LINES

Wen C. Yang, Penn Township, Allegheny County, Pa.; Charles E. Spangler, Davenport, Fla.; Joe P. Morris, Penn Hills, and Dale L. Keairns, Swissvale, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1979, Ser. No. 69,431

Int. Cl.³ G01R *5/28*

U.S. Cl. 324—454 **5 Claims**



1. Apparatus for the detection of stagnant particles in a region behind the wall of a container in which solid particles are normally maintained in constant movement by a stream of gas, comprising:

a probe electrode mounted across said wall adjacent said region and isolated from said wall, said probe electrode having a first end exposed to said particles in said region and a second end outside of said container,

a gas-filled discharge lamp having an electrode connected to ground potential and an active electrode disposed a predetermined distance from said second end of said probe electrode to define a voltage air gap,

said lamp normally generating flashes in succession due to voltage breakdown across said air gap when said solid particles are in movement, and said lamp being devoid of flashes when said solid particles are stagnant in the vicinity of said first end of said probe electrode.

4,275,354

PULSE WIDTH MODULATING CIRCUIT

Masayuki Suematsu; Takao Mogi, both of Tokyo, and Akira Taki, Atsugi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 19, 1979, Ser. No. 5,021

Claims priority, application Japan, Jan. 25, 1978, 53-6832

Int. Cl.³ H03K *7/08*

U.S. Cl. 328—58 **9 Claims**

1. A pulse width modulating circuit comprising:

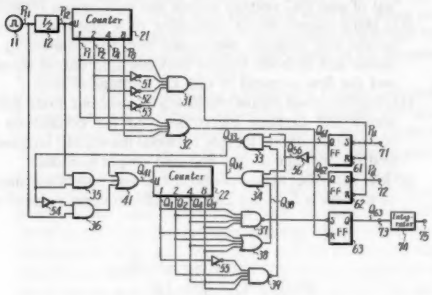
pulse generating means for generating clock pulses having a predetermined period;

first counter means having an output phase for counting said clock pulses from said pulse generating means;

second counter means having an output phase for counting said clock pulses from said pulse generating means;

pulse number control means for controlling the number of said clock pulses supplied to said second counter means including pulse adding means for adding at least one additional pulse to the clock pulses fed from said pulse generating means to said second counter means in response to a first control signal and pulse subtracting means for sub-

tracting at least one pulse from the clock pulses fed from said pulse generating means to said second counter means in response to a second control signal; and



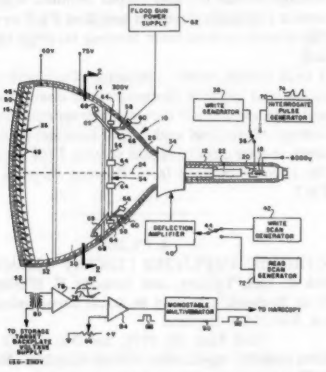
phase detecting means for producing a pulse width modulated signal in response to a phase difference between said output phase of said first counter means and said output phase of said second counter means.

4,275,355

DIRECT VIEW STORAGE TUBE HAVING IMPROVED READOUT PERFORMANCE

Melvin A. Holznagel, Sherwood, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 23, 1979, Ser. No. 14,518
Int. Cl.³ H01J *29/41*
U.S. Cl. 328—124 **16 Claims**



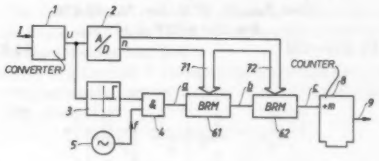
1. A cathode ray storage tube comprising:
an envelope having a neck section, a funnel section and a faceplate section of generally polygonal configuration;
storage target means provided on an inside surface of said faceplate section;
electron gun means provided within said neck section for generating, focussing and accelerating an electron beam toward and onto said storage target;
write generator means connected to said electron gun means for controlling said electron beam;
deflection means for deflecting said electron beam over said storage target to form charge images thereon; and
a flood gun assembly within said funnel section between said deflection means and said target means, said assembly including mounting means having first flood gun means mounted along said mounting means, extensions provided by said mounting means extending toward corners of said storage target and second flood gun means mounted on said extensions, said flood gun means generating and distributing flood electrons substantially uniformly over said storage target with some of said flood electrons being attracted to said charge images to drive the areas containing said charge images towards one of two stable potentials for the purpose of storing said charge images as stored information.

4,275,356

DIGITAL TIME DEPENDENT RELAY CIRCUITRY

Stig Aviander, and Curt Jacobsson, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Feb. 6, 1979, Ser. No. 9,766
Claims priority, application Sweden, Feb. 9, 1978, 7801510
Int. Cl.³ H03K *17/28*
U.S. Cl. 328—129 **3 Claims**



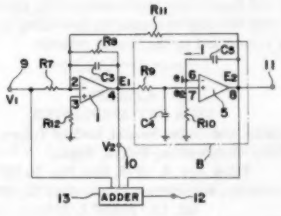
1. Time dependent relay circuitry comprising means for converting an incoming measurement signal into a binary number corresponding thereto; means for generating an input signal with a predetermined frequency when the measurement signal exceeds a predetermined value; a timing circuit including at least one binarily controlled frequency multiplier, the control signal of which consists of said binary number, and the input frequency of which is determined by said input signal; and a binary counter responsive to the output frequency of said frequency multiplier and adapted to deliver an output signal when the contents of said binary counter reach a predetermined value.

4,275,357

ACTIVE FILTER

Fumio Nakayama, and Toshikazu Funahara, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 23, 1979, Ser. No. 87,321
Claims priority, application Japan, Oct. 27, 1978, 53/132762
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—107 **4 Claims**



1. An active filter comprising:
(a) a first differential amplifier having an inverting input, a non-inverting input and an output; a first resistor and a first capacitor being connected in parallel between the inverting input and the output of said first differential amplifier, and the non-inverting input of said first differential amplifier being connected to ground;
(b) a second differential amplifier having an inverting input, a non-inverting input and an output; the non-inverting input of said second differential amplifier being connected

through a second resistor to the output of the first differential amplifier and also through a second capacitor to ground; the inverting input of said second differential amplifier being connected through a third capacitor to its output and also through a third resistor to ground; and the output of said second differential amplifier being connected through a fourth resistor to the inverting input of the first differential amplifier; and

(c) an input terminal connected to the inverting input of the first differential amplifier and adapted to receive input signals.

4,275,358

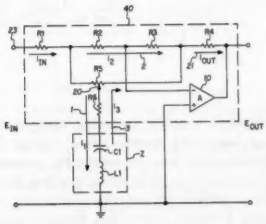
FREQUENCY SENSITIVE AMPLITUDE EQUALIZATION CIRCUIT

Wayne A. Winget, Richardson, Tex., assignor to Rockwell International Corporation, Dallas, Tex.

Filed Jun. 29, 1979, Ser. No. 53,478

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—109 **13 Claims**



1. A frequency sensitive amplitude equalizing circuit, comprising:

means for providing an output signal that is a gain factor "A" times an input signal where "A" is a negative value;

variable means "X" for providing a shunt to a reference point, the input signal of a predetermined frequency if said variable means "X" is <0.5, and the output signal, if the variable means "X" is 0.5, $\leqq 1$; and

means for providing an input resistance in series with the means for providing an output signal and an output resistance in series with the means for providing an output signal including, in cascade arrangement, four resistors of equal resistance, with the junction of the first two resistors connected to the variable means "X," the junction of the second and third resistors connected to the input of the means for providing an output signal, the junction of the third and fourth resistors connected to the variable means "X," and the output means for providing an output signal being connected to the fourth resistor.

4,275,359

MOS FET AMPLIFIER

Tadao Yoshida, and Tadao Suzuki, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,587

Claims priority, application Japan, Apr. 11, 1978, 53-42420

Int. Cl.³ H03F *3/217*

U.S. Cl. 330—251 **6 Claims**

1. A MOS-type FET amplifier comprising:

(A) a DC voltage source having first and second terminals;

(B) a first MOS-type FET having gate, source and drain electrodes;

(C) a second MOS-type FET having gate, source and drain electrodes;

(D) pulse signal source means for supplying a pair of drive signals to the gate electrodes of said first and second FETs with the same phase relation to each other;

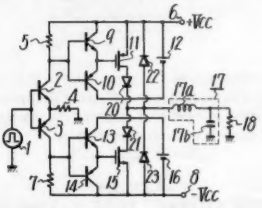
(E) first circuit means for connecting the source and drain electrodes of said first FET between the first terminal of said DC voltage source and an output terminal;

(F) second circuit means for connecting the source and drain electrodes of said second FET between the second terminal of said DC voltage source and said output terminal;

(G) third circuit means consisting of a first diode having anode and cathode electrodes and for connecting the anode and cathode thereof between said output terminal and the first terminal of said DC voltage source;

(H) fourth circuit means consisting of a second diode having anode and cathode electrodes and for connecting the anode and cathode thereof between the second terminal of said DC voltage source and said output terminal;

(I) low pass filter means connected to said output terminal so as to flow a forward current and a reverse current to a



load in response to the drive signal from said pulse signal source means;

(J) fifth circuit means consisting of a third diode having anode and cathode electrodes and connecting the anode and cathode thereof between the first terminal of said DC voltage source and said output terminal in series with the source and drain circuit of said first FET so as to prevent the reverse current from flowing through said first FET; and

(K) sixth circuit means consisting of a fourth diode having anode and cathode electrodes and connecting the anode and cathode thereof between the second terminal of DC voltage source and said output terminal in series with the drain source circuit of said second FET so as to prevent the reverse current from flowing through said second FET.

4,275,360

ELECTRONIC AMPLIFIER CIRCUIT ARRANGEMENTS

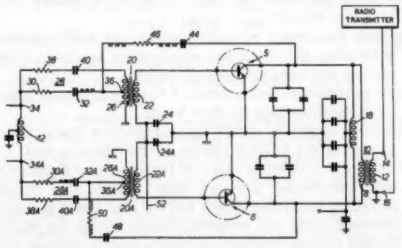
Kenneth E. Gill, Yateley, and Anthony E. Hilling, Guildford, both of England, assignors to Racal Communications Equipment, Berkshire, England

Filed Mar. 29, 1979, Ser. No. 24,972

Claims priority, application United Kingdom, Mar. 29, 1978, 12181/78

Int. Cl.³ H03F *3/26*

U.S. Cl. 330—276 **3 Claims**



1. An amplifier circuit arrangement, comprising

two matched power transistors connected together to provide a push-pull output and biased so as to operate in Class AB, and

a respective and separate transformer-coupled driving circuit connected to drive each transistor such that when an input current is applied to one of the transistors through its respective driving circuit substantially none of the current is applied to the other transistor,

each driving circuit comprising a respective transformer and a respective input circuit connected to energise the primary winding of the transformer with an input current whereby the secondary winding of the transformer applies a corresponding current to the respective transistor,

each input circuit comprising two parallel-connected input paths for the input current and each connected to a respective point on the primary winding of the respective transformer, one said input path having an impedance which increases with frequency and being connected to drive the input current through a smaller part of the primary winding than the other input path which has an impedance which decreases with increasing frequency, so as to alter the effective turns ratio of the transformer as the frequency increases and thereby to compensate for the decrease in impedance of the respective transistor as the frequency increases.

4,275,361

H.F. AMPLIFIER

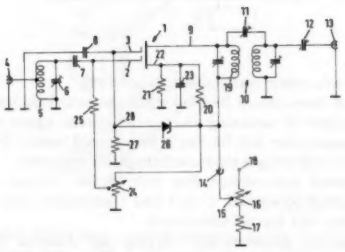
Josef H. Schürmann, Oberhummel, Fed. Rep. of Germany, assignor to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,793

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1978, 2833056

Int. Cl.³ H03F *3/16;* **H03G** *3/30*

U.S. Cl. 330—277 **10 Claims**



1. High frequency amplifier stage comprising a dual-gate field-effect transistor having a first gate electrode for receiving a high frequency input signal to be amplified, a second gate electrode connected to ground with respect to high freqencies, and an output circuit connected to a supply voltage terminal, voltage divider means comprising zener diode means and resistor means connected to said supply voltage terminal, said voltage divider means having a tap connected to one of the first and second gate electrodes, and means for adjusting a supply voltage connected to said supply voltage terminal for changing the gain of said amplifier stage.

4,275,362

GAIN CONTROLLED AMPLIFIER USING A PIN DIODE

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,324

Int. Cl.³ H03G *3/30, 9/24*

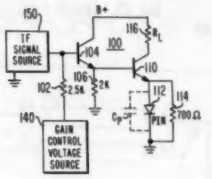
U.S. Cl. 330—283 **15 Claims**

1. A gain controlled amplifier comprising:

a transistor including base, emitter, and collector electrodes, and coupled in a common emitter amplifier configuration;

a source of input signals coupled to said base electrode;

a load impedance coupled to said collector electrode;



a PIN diode direct current coupled between said emitter electrode and a point of reference potential, and biased for forward conduction; and

a source of gain control voltage coupled to said transistor for simultaneously varying the bias of said transistor and said PIN diode.

4,275,363

METHOD OF AND APPARATUS FOR DRIVING AN ULTRASONIC TRANSDUCER INCLUDING A PHASE LOCKED LOOP AND A SWEEP CIRCUIT

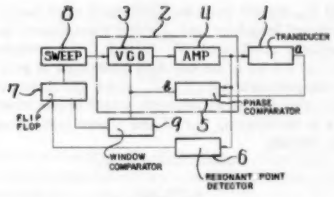
Shoji Mishiro, and Seiji Hamada, both of Kawasaki, Japan, assignors to Taga Electric Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1979, Ser. No. 65,162

Claims priority, application Japan, Jul. 6, 1979, 54-85033

Int. Cl.³ H01L *41/08;* **H03L** *7/12;* **H03B** *5/32*

U.S. Cl. 331—4 **5 Claims**



1. A method of driving an ultrasonic transducer comprisng the steps of:

sweeping the frequency of an oscillating signal over a first frequency range;

driving an ultrasonic transducer by applying said oscillating signal to said ultrasonic transducer;

detecting the resonant point of said ultrasonic transducer during said sweeping;

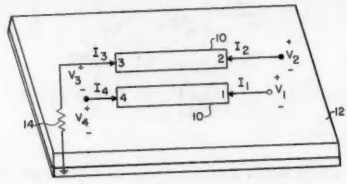
stopping the sweeping upon detection of a resonant point; and

driving said ultrasonic transducer using a phase locked loop, where the loop includes a phase comparator for comparing the oscillating signal with an output signal from the transducer and an oscillator responsive to the phase comparator for producing said oscillating signal.

4,275,364
RESONANT ELEMENT TRANSFORMER

Arthur R. Skatvold, Jr., Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1979, Ser. No. 78,331
Int. Cl.³ H01P *5/02*
U.S. Cl. 333—33 **8 Claims**



1. An impedance matching device which is a resonant element transformer comprising:

a substrate of dielectric material; and

a pair of coplanar coupled transmission line conductors placed on said substrate and can be described as four-port impedance Z_{ij} defined as

$$\begin{bmatrix} V_1 \\ V_2 \\ V_3 \\ V_4 \end{bmatrix} = \begin{bmatrix} Z_{11} & Z_{12} & Z_{13} & Z_{14} \\ Z_{21} & Z_{22} & Z_{23} & Z_{24} \\ Z_{31} & Z_{32} & Z_{33} & Z_{34} \\ Z_{41} & Z_{42} & Z_{43} & Z_{44} \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \\ I_4 \end{bmatrix}$$

where

V_i=voltage at each port i=1,2,3 or 4,

I_i=current at each port i=1,2,3 or 4,

$$Z_{11} = Z_{22} = Z_{33} = Z_{44} = -j(Z_{oe} + Z_{oo}) \frac{\cot \theta}{2},$$

$$Z_{12} = Z_{21} = Z_{34} = Z_{43} = -j(Z_{oe} - Z_{oo}) \frac{\cot \theta}{2},$$

$$Z_{13} = Z_{31} = Z_{24} = Z_{42} = -j(Z_{oe} - Z_{oo}) \frac{\csc \theta}{2},$$

$$Z_{14} = Z_{41} = Z_{23} = Z_{32} = -j(Z_{oe} + Z_{oo}) \frac{\csc \theta}{2},$$

Z_{oe} and Z_{oo} are the even and odd mode impedances,

θ=electrical length of said coupled transmission lines,

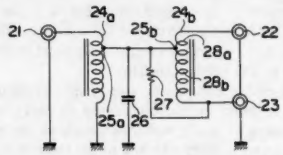
j=imaginary coefficient, $\sqrt{-1}$, and Z_r=a complex impedance of a load to be matched connected at port **1**, such that the parameters Z_{ij} Z_{oe}, Z_{oo} and θ are chosen to match Z_r to a predetermined network whose characteristic resistance is terminating port **3** and where ports **2** and **4** are open circuits.

4,275,365
BRANCHING EQUIPMENT FOR CATV SYSTEMS

Tsunekazu Ando, Hiratsuka, Japan, assignor to Hochiki Corporation, Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 66,477
Claims priority, application Japan, Aug. 18, 1978, 53-112427[U]
Int. Cl.³ H03H *7/48*
U.S. Cl. 333—131 **1 Claim**

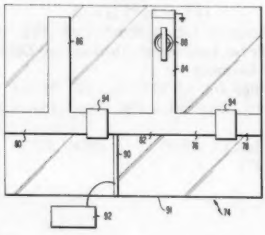
1. In branching equipment for CATV systems including an input terminal, a pair of output terminals, a matching transformer consisting of a tapped winding having one end thereof connected to said input terminal and other end thereof grounded, and a distributing transformer consisting of a tapped winding having ends thereof respectively connected to said output terminals, the tap of said matching transformer being connected to the tap of said distributing transformer, the number of turns in a portion between one end of the winding and the tap of said distributing transformer being different from that in another portion between the other end of the winding and the tap of said distributing transformer to provide a predetermined ratio, the improvement consisting of a power absorbing resistor connected across one of said winding portions on the sides of the tap of said distributing transformer having a greater number of turns than the other.



4,275,366
PHASE SHIFTER

Alfred Schwarzmann, Mt. Laurel, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,503
Int. Cl.³ H01P *1/185, 3/08*
U.S. Cl. 333—161 **8 Claims**



1. A microstrip phase shifter comprising:

a first transmission line having a characteristic impedance capable of sustaining an electromagnetic signal, said first transmission line having a preselected center frequency and exhibiting a characteristic phase response;

a second transmission line stub section having one end thereof connected to said first transmission line and the other end thereof terminated;

means for electronically varying the effective electrical length of said second transmission line whereby said phase response of said signal propagating along said first transmission line is incrementally changed; and

a third transmission line stub section extending from said first transmission line, said third transmission line being spaced apart along said first transmission line from said second transmission line by about a quarter wavelength of said center frequency and having a fixed electrical length.

4,275,367
DIGITAL DIODE PHASE SHIFTER ELEMENTS

Stanley Gaglione, New Hyde Park, and Gerard L. Hanley, Melville, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,187
Int. Cl.³ H01P *1/185, 3/08*
U.S. Cl. 333—164 **14 Claims**

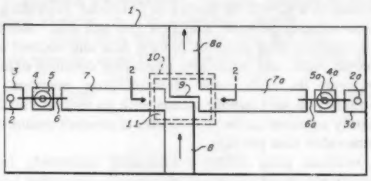
10. Phase shifter means comprising: substrate means having first and second opposed sides, ground plane means disposed on said first opposed side, transmission line apparatus disposed on said second

opposed side including:

capacitor means,

input and output transmission line means coupled to opposite sides of said capacitor means,

first and second transmission line means respectively directly coupled to said input and output transmission line means at said capacitor means,



first and second switching diode means respectively coupled to said first and second transmission line means opposite said capacitor means and to bias means, and

third and fourth transmission line means respectively coupled to said first and second transmission line means at said diode means and to said ground plane means.

4,275,368

EMC-/EMI-FILTER MODULE

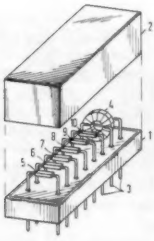
Josef Wimmer, Regenstauf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,221

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 7828515[U]

Int. Cl.³ H03H *7/00, 7/09*

U.S. Cl. 333—167 **1 Claim**



1. An EMC-/EMI-filter module for interfacing unshielded data and signal lines with a symmetrical processing device comprising four branches, each branch consisting of an LC filter, the inductance for each branch being formed by a quadruple choke having a highly permeable ferrite single aperture core on which a winding of four-ply parallel wire is wound, said four-ply parallel wire having ends respectively connected to said branches, the capacitor for each said branch being formed of a ceramic multi-layer chip capacitor, all of said branches being contained in a sixteen terminal dual-in-line package having a selected raster dimension.

4,275,369

FILTER FOR MICROWAVES

Mitsuo Sekiguchi, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

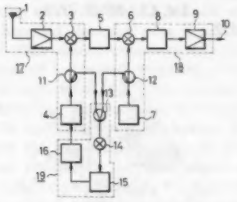
Filed Jul. 27, 1979, Ser. No. 61,415

Claims priority, application Japan, Aug. 2, 1978, 53-106318[U]

Int. Cl.³ H01P *1/20, 1/208*

U.S. Cl. 333—209 **4 Claims**

1. A filter for signals in the microwave frequencies, comprising a housing forming a plurality of resonator cavities separated by respective side walls therebetween, said housing including a bottom wall and each of said cavities having a respective resonance rod formed unitarily with said bottom wall, means including windows formed in said side walls for



coupling said cavities together, coupling loops extending respectively into the two end resonator cavities at locations therein adjacent said bottom wall, and holes formed in said bottom wall at locations adjacent said coupling loops.

4,275,370

ELECTRICAL OVERLOAD CIRCUIT BREAKER

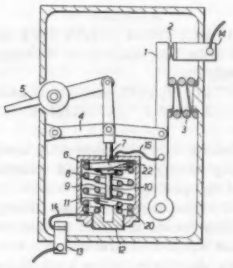
Raymond B. Sims, Beaconsfield, England, assignor to Delta Materials Research Limited, London, England

Filed Jul. 18, 1979, Ser. No. 58,740

Claims priority, application United Kingdom, Jul. 21, 1978, 30681/78; Sep. 14, 1978, 36850/78

Int. Cl.³ H01H *75/12, 77/04*

U.S. Cl. 335—37 **12 Claims**



1. An electrical overload circuit breaker comprising:

(a) a pair of contacts which are relatively movable between open and closed positions;

(b) a helical spring made predominantly of a shape memory effect material having an elastic modulus which varies significantly with temperature in a reversible manner over a transition temperature range;

(c) an armature operatively acted on mechanically by said helical spring;

(d) said helical spring and said armature forming a solenoid in which said armature is electromagnetically urged on passage of current through said spring in the same direction as said armature is urged by said spring on rise of temperature thereof;

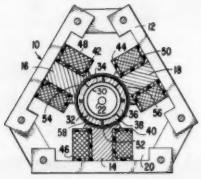
(e) coupling means between said armature and said contacts whereby said contacts are opened on specified movement of said armature in said direction; and

(f) connection means for passing a current in series through said contacts when closed and said helical spring.

4,275,371
ELECTROMAGNETIC ROTARY ACTUATOR

John D. Vogel, Brecksville, Ohio, assignor to The Singer Company, Stamford, Conn.

Filed Jul. 26, 1979, Ser. No. 61,164
Int. Cl.[3] H01F 7/18
U.S. Cl. 335—272 7 Claims



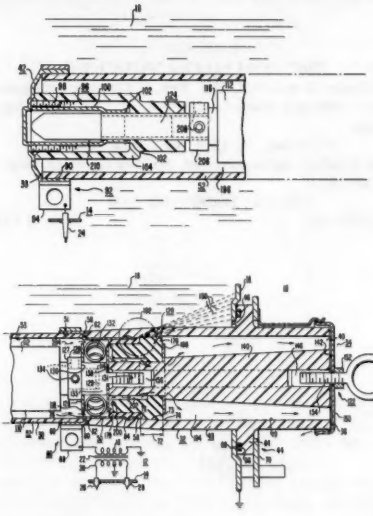
1. An electromagnetic rotary actuator comprising:
a stator assembly including three pole pieces, each of said pole pieces having a coil wound thereabout adapted for selective energization thereof to establish a magnetic field through the respective pole piece;
a rotor assembly mounted for rotation about an axis inside said stator assembly, said rotor assembly having a permanently magnetized peripheral portion defining four regions of alternating magnetic polarity; and
control means for selectively energizing said stator coils to generate a resultant magnetic field which interacts with the magnetic field from said magnetized peripheral portion of said rotor assembly to move said rotor assembly about said axis to a selected angular position;
wherein one of said coils is a reference coil and the control means supplies said reference coil with a fixed energization and supplies a fixed total energization to the remaining two coils in a complementary manner.

4,275,372
PROTECTED ELECTRICAL INDUCTIVE APPARATUS

Edgar R. Eley, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1979, Ser. No. 104,645
Int. Cl.[3] H02H 7/04; H01H 85/16
U.S. Cl. 337—4 6 Claims

1. Protected electric inductive apparatus, comprising:
a metallic casing having primary and secondary electrical bushings and an opening,
liquid dielectric means disposed in said casing,
electrical winding means disposed in said casing and immersed in said liquid dielectric means,
protective fuse apparatus including a tubular receptacle and a removable fuse portion,
said receptacle having first and second ends, a wall portion having an inner surface which defines an opening which extends between its ends, means sealing the opening at its second end, and first and second spaced electrical terminals each having portions which are respectively accessible from the inside and outside of said tubular receptacle,
means sealingly mounting said receptacle through the opening in said casing, with the first end of the receptacle being accessible outside the casing, and the second end extending into said casing such that at least the first and second spaced electrical terminals are immersed in said liquid dielectric means,
means electrically connecting the outer portions of said first and second spaced electrical terminals to a primary bushing and said electrical winding means, respectively,
said removable fuse portion having first and second ends, including handle means at the first end and fuse means adjacent to the second end, said removable fuse portion including first and second electrical contact means which engage the inner portions of said first and said electrical terminals, respectively, when the removable fuse portion is in assembled relation with said receptacle,
said first electrical terminal having first and second axially spaced ends, with the first end being part of the inner portion of the first electrical terminal, said first end being the closest live element of said protective fuse apparatus to said metallic casing when said primary bushing is connected to a source of electrical potential, providing electrical stresses between said first end and said casing,
and a resilient plug member having first and second axially spaced ends, and an axially extending opening extending between its ends, said resilient plug member being mounted on said handle means with its second end immediately adjacent to the first electrical contact means of said removable fuse portion,
said resilient plug member including intimately bonded electrically conductive and electrically insulating portions which define electrically conductive and electrically insulating outer surfaces, with the conductive outer surface starting at the second axial end of said plug member and extending for a predetermined dimension towards the first



axial end, and with the non-conductive outer surface extending from the termination of the conductive surface to its first axial end,
said resilient plug member being dimensioned and positioned on said handle means such that when the removable fuse portion is in assembled relation with said receptacle, the electrically conductive outer surface of said resilient plug member contacts the first electrical terminal and extends past the first axial end thereof, towards the first end of the receptacle, and its electrical insulating outer surface snugly contacts the adjacent inner surface of the wall portion of said receptacle, to effectively continue the first electrical terminal into the electrically conductive portion of said resilient plug member and provide an air-free interface at the intimate bond between the conductive and insulating portions thereof, and between the electrically insulating outer surface and contacting inner surface of a receptacle,
said resilient plug member defining first and second air spaces within the receptacle adjacent to its first and second axial ends, respectively,
said resilient plug member defining at least one air path

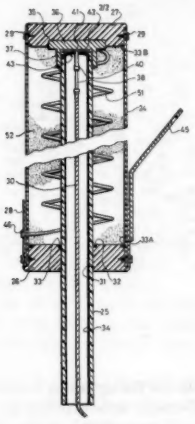
between the resilient plug member and said handle means adjacent to its axially extending opening which communicates with said first and second air spaces.

4,275,373

COMBINATION EXPULSION FUSE

John F. Howard, Peterborough, Canada, assignor to Canadian General Electric Co., Ltd., Toronto, Canada

Filed Dec. 26, 1979, Ser. No. 108,185
Claims priority, application Canada, Aug. 24, 1979, 334516
Int. Cl.³ H01H 71/20
U.S. Cl. 337—144 **10 Claims**



1. A fusible device comprising,
a cylindrical casing primarily of electrical insulating material and having a first end and a second end,
a first end closure closing said first end of said casing,
an expulsion tube primarily of electrical insulating material within said casing extending substantially coaxially therewith mounted at one end adjacent to said first end closure and projecting beyond said second end of said casing and terminating with an open end,
a second end closure at said second end of said casing in sealing relationship with said casing and said expulsion tube,
a fusible link within said expulsion tube having a fusible portion and a flexible cable extending to and projecting from said open end,
a connector terminal at said second end of said casing, and
a fuse element within said casing connected at one end to said connector terminal and at the other end adjacent said first end closure to said fusible link.

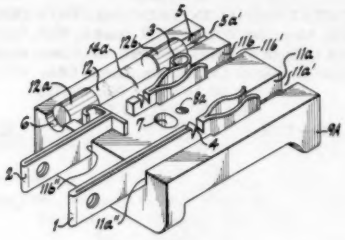
4,275,374

FUSE-PLUG ADAPTER FOR ELECTRICAL CORD

Daniel Chaucer, 84-61 Furmanville Ave., Rego Park, N.Y. 11379

Filed Aug. 20, 1979, Ser. No. 67,933
Int. Cl.³ H01H 85/02
U.S. Cl. 337—197 **8 Claims**

1. An electrical fuse-plug adapter and circuit comprising in combination, a non-conductor housing having formed therein three separate through-channels having first, second and third channel-openings, and first, second and third other-channel-openings, and interconnecting channel spaces thereof, said first and second other-channel-openings being female receptacles positioned to receive paired male prongs of an electrical plug, said first and second channel-openings each being of a size and shape and including first channel-support-structure adapted to mount and support paired male electrical conductor elements with one within each respectively of the first and second through-channels adjacent said channel-openings, and said first and second through-channels each being of a size and shape and including second channel-support-structure adapted for each to mount and support a female electrical conductor element adjacent said first and second other-channel-openings at locations such that electrical contact is made with said paired male prongs when said electrical plug is mounted within the first and second other-channel-openings, said third other-channel-opening being of a size and shape adapted to receive an element therethrough into said third channel such that an electrical fuse mounted within the third through-channel may be pushed out of said third channel-opening, first and second male and female electrical conductors, the first and second female electrical conductors being mounted and supported respectively in said first and second through-channels paired-with and adjacent said first and second other-channel-openings, the first and second male electrical conductors mounted and supported respectively in said first and second through-channels and extending outwardly from respectively said first and second channel-openings, said housing structure being constructed with said second and third channels being in com-



munication with one-another such that an upper electrical-contact end of an electrical fuse contacts said second male electrical conductor and concurrently a lower electrical-contact end of the electrical fuse contacts said second female electrical conductor when the electrical fuse is mounted within said third through-channel, said second female electrical conductor being separate and spaced from said second male electrical conductor, said housing structure including a cord-receiving hole in a face thereof with the hole being in communication with each of said first and second through-channels by cross-channels formed within inner walls of said housing structure adapted for parted-paired lead-wires to operatively make electrical contact with one of the paired wires in contact with said first female electrical conductor and a remaining other one of the paired wires in contact with said second female electrical conductor, and first and second electrical cord leads positioned within said hole and within said cross-channels and having the first electrical cord positioned in electrical communication with at least said first female electrical conductor and having the second electrical cord lead in electrical communication with said second female electrical conductor.

4,275,375

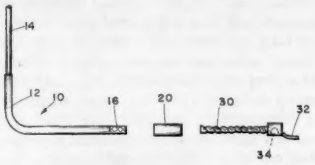
HEATING ELEMENT CONNECTOR AND METHOD

Charles B. Vallance, Berrien Springs, Mich., assignor to Leco Corporation, St. Joseph, Mich.

Filed Jan. 26, 1979, Ser. No. 6,596
Int. Cl.³ H01C 1/148, 1/144
U.S. Cl. 338—329 **9 Claims**

1. A connector assembly for use with a cermet heating element comprising:
a cermet heating element for a furnace having an end with a diameter of about ¼ inch for receiving an electrical conductor for applying electrical operating power to said heating element; and
a metallic electrically conductive sleeve having one end

positioned over and surrounding said end of said heating element and bonded thereto by a brazing alloy and having



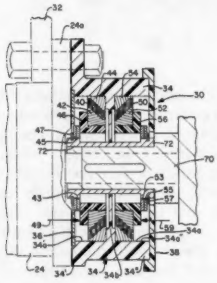
an opposite open end defining a cavity for receiving the end of an electrical conductor.

4,275,376

ELECTRICAL SIGNAL INTERCONNECTION COUPLER

William C. Alexander, Barberton; Richard L. Kirk, North Canton, and Kenneth A. Thomsen, Akron, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 28, 1980, Ser. No. 144,755
Int. Cl.³ B60C *23/00*
U.S. Cl. 340—52 R **35 Claims**



1. A signal communicator for transmitting an electrical signal from one member rotating relative to another member comprising:

a first substantially cylindrical electrically conductive metal race having a bore that tapers radially inwardly for the approximate width of the race;

a second substantially cylindrical electrically conductive metal race positioned coaxially within the bore of the first metal race and having an outer surface that tapers radially outwardly for the approximate width of the race; and

at least one conically shaped carbon graphite ring positioned coaxially between the first and second metal races and having an outwardly facing surface in intimate contact with the inwardly tapered bore of the first race and having an inner bore surface in intimate contact with the outwardly tapered surface of the second metal race;

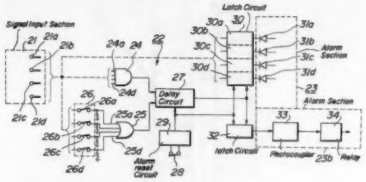
said communicator being positioned coaxially with respect to the rotating member and receiving electrical signals from the rotating member via electrical connection to one of the races and passing said signal therethrough to the other of the races through the graphite ring and to the other of the members via electrical connection to the other of the metal races.

4,275,377

ALARM DEVICE FOR INFORMING REDUCTION OF PNEUMATIC PRESSURE OF VEHICLE TIRES

Akira Matsuda, Higashimurayama; Norio Goshima, Musashino; Shigeo Yasuda, Musashino; Motoaki Iwasaki, Musashino, and Hiroshi Nishino, Musashino, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo and Mitaka Instrument Co., Ltd., Musashino, both of, Japan

Filed Jun. 18, 1979, Ser. No. 49,830
Claims priority, application Japan, Jun. 20, 1978, 53-75033
Int. Cl.³ B60C *23/04*; G08B *21/00*
U.S. Cl. 340—58 **3 Claims**

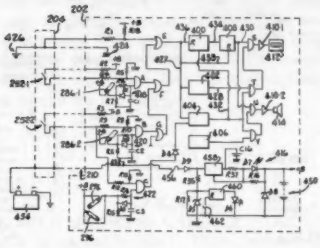


1. In an alarm device for signalling a reduction of the pneumatic pressure of vehicle tires including an oscillator **(6)** having an oscillation coil secured to a chassis of a vehicle; a resonator **(1)** secured to a peripheral portion of a wheel having a tire adjacent to the oscillation coil and including a pressure sensing switch **(4)** responsive to an abnormal change of the pneumatic pressure of said vehicle tire, a resonant coil and a capacitor **(5)** which are tuned to an electromagnetic wave radiated from the oscillation coil; a signal processing device **(3)** containing means for sensing a change in an oscillation condition generated in the oscillator due to a resonant condition in the resonator switched on and off in accordance with abnormal internal pressure of the tire and for processing a signal sensed by the sensing means; and an alarm means for generating a warning signal in accordance with the output of the signal processing device; the improvements characterized by: the signal processing device including a signal input section **(21)** having a desired number of input terminals, a signal processing section having an arithmetic circuit connected to the signal input section and comprising an AND gate **(24)** and an OR gate **(25)** connected in parallel with each other and each having the same number of input terminals as the number of output terminals of the signal input section and individually connected thereto, a delay circuit **(27)** having first and second input terminals connected to outputs of the AND gate and the OR gate, a first latch circuit **(30)** having a second input terminal connected to an output of the delay circuit and a plurality of latch elements equal in number to the output terminals of the signal input section and having first input terminals individually connected thereto, a second latch circuit **(32)** having a first input terminal connected to the output of the delay circuit and consisting of a single latch element, and an alarm reset circuit **(29)** connected to a third input terminal of the first latch circuit, to a second input terminal of the second latch circuit, and to a third input terminal of the delay circuit, respectively, and having a switch **(28)** for resetting an alarm signal, and an alarm section operated by outputs of the first and second latch circuits, whereby an alarm signal is not generated at normal internal pressure and during stops of the vehicle.

4,275,378
MONITORING THE OPERATION OF A VEHICLE

Henning M. Henderson, Johannesburg, South Africa, assignor to Kiloking (Proprietary) Limited, South Africa

Filed Aug. 17, 1978, Ser. No. 934,557
Claims priority, application South Africa, May 23, 1978, 78/2964; Jul. 26, 1978, 78/4243; Jul. 26, 1978, 78/4245; Jul. 26, 1978, 78/4246
Int. Cl.³ B60Q 5/00; G08B 21/00
U.S. Cl. 340—71 20 Claims



20. A method of monitoring the operation of a motor vehicle, which method comprises the steps of:

sensing the vehicle's throttle opening;

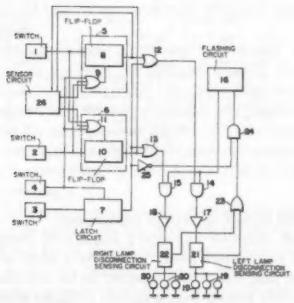
sensing a parameter which corresponds to the magnitude of a variable load force acting on the vehicle in a direction opposite the direction of forward travel of the vehicle; and

giving an indication when the throttle opening exceeds a predetermined throttle opening value, the predetermined throttle opening value being, over at least part of the range of said parameter, a continuously increasing function of said parameter.

4,275,379
TRAFFIC INDICATOR

Tasuku Nakano, Gifu, and Tadanao Hamamoto, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed May 1, 1979, Ser. No. 34,994
Claims priority, application Japan, May 1, 1978, 53-52450
Int. Cl.³ B60Q 1/42
U.S. Cl. 340—81 R 12 Claims



1. A traffic indicator for an automobile comprising:

a momentary right switch for giving signals for a right turn signaling,

a momentary left switch for giving signals for a left turn signaling,

a right latch circuit for latching signals given by said right switch,

a left latch circuit for latching signals given by said left switch,

a flashing circuit for generating flash signals,

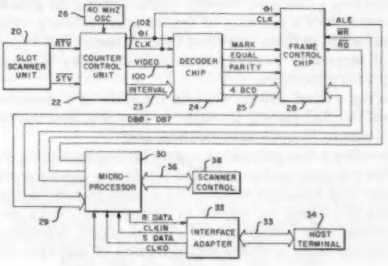
at least one indicator lamp coupled to an output of at least one of said right or left latch circuits for flashing when said right or left latch circuits generates an output, and

a sensor circuit for sensing the direction of the rotation of the steering wheel, said sensor circuit generating signals to reset said right latch circuit when said steering wheel returns from the right to a point at a certain distance from the neutral position, and signals to reset said left latch circuit when said steering wheel returns from the left to a point at a certain distance from the neutral position, said sensor circuit comprising a photo transistor opposite a light emitting diode and a cylinder having at least one opening therein coupled to said steering wheel and extending between the light emitting diode and said photo transistor, said photo transistor turns on and off in response to light from said light emitting diode as the steering wheel is rotated and a switch circuit which turns on and off in response to at least two outputs of said photo transistor and sends cancel signals to right or left latch circuits.

4,275,380
TOPOGRAPHY FOR INTEGRATED CIRCUIT FRAME CONTROL CHIP

Harry N. Gardner, and Wayne R. Gravelle, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed May 30, 1979, Ser. No. 43,930
Int. Cl.³ G06K 7/14
U.S. Cl. 340—146.3 Z 6 Claims



1. An integrated circuit for sequentially receiving a plurality of digital character words produced in response to optical scanning of a bar coded label and also receiving a plurality of corresponding binary signals representing, respectively, validity, scanning direction, and timing of the digital character words and outputting formatted character words to a digital processor system coupled to said integrated circuit, said integrated circuit comprising in combination:

a. first means for receiving said digital character words and said binary signals;

b. a plurality of storage means coupled to said first means for storing predetermined ones of said digital character words, wherein said plurality of storage means includes a plurality of groups of shift registers, each of which shift registers is capable of storing one of said digital character words;

c. second means responsive to said first means for routing predetermined ones of said digital character words into predetermined ones of said plurality of storage means, wherein said second means includes a plurality of counter circuits for controlling said routing of said digital charac-

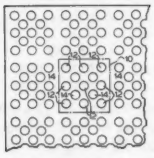
ter words to predetermined ones of said plurality of groups of shift registers; and

d. third means responsive to said digital processor system for receiving commands from said digital processor system and also effecting outputting of digital character words from said predetermined ones of said storage means to said digital processor system, said integrated circuit having first, second, third, and fourth sequentially located edges, the portion of said first means receiving said digital character words generally being located substantially closer to said first and fourth edges than to said second and third edges to effect conducting said digital character words from bonding pads adjacent to said first and fourth edges, said plurality of groups of shift registers generally being located between said second means and said second edge, said third means being located substantially closer to said second edge than to said fourth edge.

4,275,381
OPERATOR READABLE AND MACHINE READABLE CHARACTER RECOGNITION SYSTEM

Richard G. Siegal, 515 W. Barry St., Chicago, Ill. 60657

Filed Jan. 2, 1980, Ser. No. 109,039
Int. Cl.³ G06K *9/18*
U.S. Cl. 340—146.3 Z **6 Claims**



1. A method of entering data into a data processing system, comprising the steps of:

providing a character bearing surface having an area designated with a plurality of spaced apart primary locations arranged in three rows and three columns and a plurality of secondary locations each surrounded by four of said primary locations,

placing a hand written mark in the form of a character on said surface passing through any part of at least one of said locations to mark said location, and

providing a data processing system having a scanning device for scanning said surface and producing signals representative of locations which have a mark placed therein and for producing no signals in response to marks on said surface not within one of said locations, whereby said signals define a binary representation of said character.

4,275,382
APPARATUS FOR MONITORING AND CONTROLLING VESSELS CONTAINING LIQUID

Louis J. Jannotta, 2800 E. Bernice Rd., Lansing, Ill. 60438

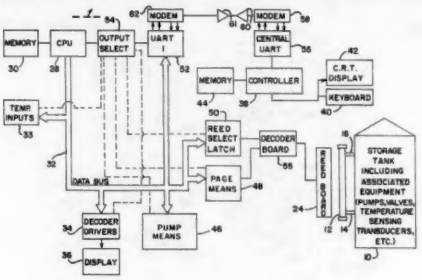
Filed Jul. 18, 1979, Ser. No. 58,508
Int. Cl.³ H04Q *1/00*; G06F *15/00*; G05B *15/00*; G05D *9/00*
U.S. Cl. 340—151 **17 Claims**

1. An apparatus for determining the level of liquid in a vessel containing liquid which comprises:

(1) a plurality of indicator means located at varying points along the height of said vessel, each said indicator means being capable of acting to indicate the presence of liquid at a predetermined level within said vessel;

(2) control means in association with said indicator means to independently periodically send first signals to each of said indicator means to determine whether any given indicator means gives a positive indication of the presence of liquid at a given level within said vessel, said control means further being capable of acting to receive second signals from said indicator means indicating the presence or absence of liquid at a given level within said vessel, said second signals being translatable by said control means into third signals representing the height of said liquid level in said vessel, said control means still further acting to independently send selected second signals which indicate the presence of the liquid level at a given level within said vessel, said third signals or both said selected second and third signals to memory means, hereinafter described;

(3) memory means in association with said control means



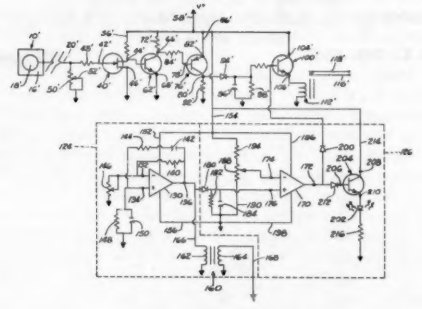
acting to receive said selected second signals, said third signals, or both said selected second and third signals from said control means and store said received signals for future use; and

(4) display means in association with said control means and acting in response to said control means to periodically receive said received signals from said memory means and said control means and provide a visual display of the height of said liquid level in said vessel.

4,275,383
PATIENT SIGNALLING SYSTEM

Roland A. White, and Mark D. White, both of 10 Terry St., Middleport, N.Y. 14105

Filed Sep. 28, 1979, Ser. No. 79,783
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—286 R **17 Claims**



1. A patient signalling system comprising:

(a) a touch sensitive capacitive transducer comprising an exposed conductive plate carried by a body of dielectric material, said transducer adapted to be conveniently and comfortably placed with a patient afflicted with an illness or paralysis rendering him incapable of providing any significant manual force or dexterity;

(b) a flexible electrical cable of significant length connected at one end to said plate; and

(c) a circuit having an input and an output and located physically remote from the patient, said circuit input connected

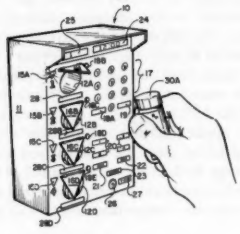
to the other end of said cable, said circuit converting a change in capacitance of said transducer when touched by the patient into an electrical signal for causing operation of an appliance connected to said circuit output, said circuit comprising a source of supply voltage, a high gain amplification stage operatively connected to said supply and having an input connected to said transducer for converting a minute signal produced by said transducer when touched by said patient into an output signal which switches at the voltage level of said supply, a wave shaping stage having an input connected to the output of said high gain amplification stage for converting impulse signals into square wave output signals, and a d.c. switch connected in controlled relation to the output of said wave shaping stage for causing completion of an electrical power circuit for the appliance.

4,275,384

PORTABLE MEDICINE CABINET WITH TIMER

Thurmond A. Hicks, and Brenda G. Hicks, both of 2433 Middleton Dr., Gastonia, N.C. 28052

Filed Jun. 4, 1979, Ser. No. 45,275
Int. Cl.³ G08B 5/00
U.S. Cl. 340—309.4 **4 Claims**



1. A portable apparatus for private use by an individual taking several different medicines, said apparatus being adapted for storing a plurality of different medicine bottles and indicating at certain predetermined times that a dose of each medicine should be taken, comprising:

a cabinet defining a plurality of open-ended, freely accessible cylindrical compartments, each of said compartments being adapted for receiving a bottle of medicine and having a hinged door pivotally secured to said cabinet for closing said compartment and securing the bottle of medicine therein;

time computer means contained within said cabinet for determining the time for taking a dosage of each of the respective medicines, said time computer means having entry means for entering a plurality of predetermined time intervals for taking a dose of each of said respective medicines contained within said respective compartments and means for providing output signals at said predetermined time intervals; and

a signal light positioned adjacent each of said compartments so as to be clearly visible when energized by said output signals and being electrically connected to said time computer means for indicating upon receipt of said output signals the respective medicine which should be removed and a prescribed dose thereof taken;

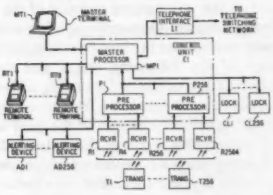
whereby an individual who is taking several different medicines which require that prescribed doses be taken at different times can assure that he does not become confused and forget to take certain doses or take the prescribed doses too often and endanger his health.

4,275,385

INFRARED PERSONNEL LOCATOR SYSTEM

Lester L. White, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 13, 1979, Ser. No. 65,876
Int. Cl.³ G01J 1/00; G01S 9/56
U.S. Cl. 340—312 **22 Claims**



1. A personnel locator system installable on a premises comprising a plurality of portable communication units, each adapted to be carried by an individual, a plurality of remote stations mounted in appropriate locations about the premises and a common control unit

CHARACTERIZED IN THAT

each portable unit including

means for establishing a coded signal unique to that unit,

means coupled to said establishing means and responsive to said coded signal for generating a modulated pulse coded infrared signal unique to each said portable unit,

battery means for providing power from an included battery source to power said portable unit;

each remote station including

means responsive to received infrared signals from a portable unit for generating a corresponding coded signal identifying each said portable unit, and

means for transmitting said generated corresponding coded portable unit signal to said common control unit; and

said control unit including

means for associating said generated corresponding coded portable unit signal with a remote station, and

means for indicating the location of each portable unit,

4,275,386

BINARY ANALOG-DIGITAL CONVERTER

Jean P. Michel, Yerres, France; Claude J. P. F. Le Can, Nijmegen, and Marinus C. W. van Buul, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,042
Claims priority, application France, May 24, 1978, 78 15446
Int. Cl.² H03K 13/02
U.S. Cl. 340—347 AD **14 Claims**

1. A binary analog-digital converter in which the analog quantity to be converted into a binary digital signal is represented by a current which lies between the minimum current and the maximum current that can be converted comprising:

an input stage;

a number of conversion stages equal to the number of n digital-signal bits required; and

an output stage;

each of said (n+2) stages of the order 0, 1, 2, . . . , i, . . . n−1, n, n+1 comprising two separate transmission channels, i.e. a comparison channel and a reference channel, all the comparison channels of the (n+2) stages being connected in series, all the reference channels of said (n+2) stages also being connected in series;

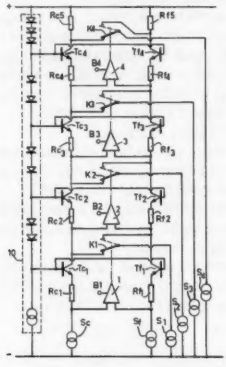
transition circuits being included between the comparison channel of each conversion stage and that of the next stage and between the reference channel of each conversion stage and that of the next stage;

the comparison channel of the input stage being adapted to

transfer an input current to the comparison channel of the next stage and the reference channel being of the input stage adapted to transfer a reference current, which is equal to a fraction of the maximum current, to the reference channel of the next stage, the difference between said input current and the reference current constituting a current which is representative of the analog quantity to be converted into a binary digital signal;

in each of the n conversion stages of the order 1, 2, 3, . . . , i, . . . , n−1, n, the comparison channel of the stage of the order i being adapted to transfer a comparison current, which comprises at least the input current, to the comparison channel of the following stage, and the reference channel of said stage of the order i being adapted to transfer a reference current equal to a fraction of the maximum current to the reference channel of the next stage;

each of the n conversion stages of the order 1, 2, 3, . . . , i, . . . , n−1, n, comprising a comparator which, depending on the two possible results of a comparison between the two currents which are respectively applied to the comparison and refernce channels of the conversion stage of the order i by said channels of the preceding stage, is adapted to determine whether the logic level of the bit associated with said stage of the order i has one, or conversely the other, of the two values which said bit may assume and by means of the two currents compared in the conversion



stage of the order i and an auxiliary current which is equal to a fraction of the maximum current and which is applied to said stage of the order i with the aid of a corresponding auxiliary current source, to switch such a current to the comparison and reference channels of the next stage that, if and only if one bit is left whose logic level has not yet been determined, the comparator of the following stage corresponding to said bit whose level is still undetermined can then compare the input current with the sum, or conversely the difference, of the reference current applied to said conversion stage of the order i by the reference channel of the preceding stage and the auxiliary current applied to said stage of the order i with the aid of the corresponding auxiliary current source, said sum and said difference in all cases lying between the minimum current and the maximum current that can be converted, each comparison between two currents being effected by a comparison between two voltages which are proportional to said currents, and the current switching under control of the comparator being adapted to make the currents in the comparison and reference channels equal, even if there is no longer a bit whose logic level has not yet been determined;

in the output stage the comparison and reference channels are adapted to respectively receive the currents which are transferred by the comparison and reference channels of the last conversion stage of the order n;

each comparison between two voltages being realized by a comparison between potential difference across two equal resistors which are each included in one channel of each conversion stage;

depending on the two possible results of the comparison between the reference current applied to the reference channel of said stage of the order i by that of the preceding stage and the current applied to the comparison stage of the same stage of the order i by that of the preceding stage, the comparator of each conversion stage of the order is adapted to determine whether the logic level of the bit corresponding to said stage of the order i has the one, or conversely the other, of the two values which said level may assume, and to switch the auxiliary current which also corresponds to said stage of the order i to the comparison channel or, conversely, the reference channel of the following stage; and

the comparator of each conversion stage of the order i, in accordance with one or the other of the two possible results of the comparison between the reference current applied to the reference channel of said stages of the order i by that of the preceding stage and the current applied to the comparison channel of said stage of the order i by that of the preceding stage, is adapted to determine whether the logic level of the bit corresponding to said stage of the order i has the one or, converely, the other of the two values which said level may assume, and to switch said reference current to the reference channel of the following stage and the sum of said current, applied to the comparison channel of said stage of the order i by that of the preceding stage, and the auxiliary current, which also corresponds to said stage of the order i, to the comparison channel of the following stage, or, conversely, to switch the current applied to the comparison channel of said stage of the order i by the comparison channel of the preceding stage to the reference channel of the following stage and the sum of said reference current and the auxiliary current to the comparison channel of the following stage.

4,275,387

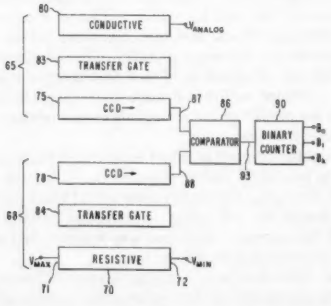
CHARGE-COUPLED DEVICE SERIAL ANALOG-TO-DIGITAL CONVERTER AND ASSOCIATED CONVERSION METHOD

Ramesh C. Varshney, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Division of Ser. No. 868,761, Jan. 12, 1978, abandoned. This application Apr. 13, 1979, Ser. No. 29,604

Int. Cl.[3] **H03K** *13/20*

U.S. Cl. 340—347 AD **10 Claims**



1. A method of converting analog signals to digital signals with a charge-coupled device (CCD) comprising the steps of:

accumulating at least one first charge packet representative of an analog signal, including applying the analog signal to a conductive region on a CCD;

accumulating at least two second charge packets representative respectively of a like number of reference voltages, including applying a reference voltage difference across a resistive region on a CCD to generate the reference voltages;

comparing the first charge packet with each second charge packet to ascertain which charge packet is larger in each comparison;

generating a binary signal in response to each comparison to indicate which of the first and second charge packets is greater for each comparison; and

appropriately counting the binary signals to generate at least one digital signal.

4,275,388

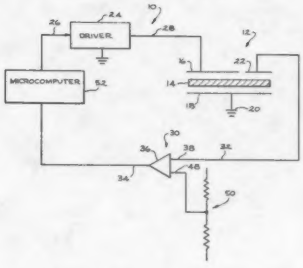
PIEZOELECTRIC AUDIBLE ALARM FREQUENCY SELF-CALIBRATION SYSTEM

Richard E. Hornung, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 9, 1980, Ser. No. 110,730

Int. Cl.³ G08B *3/00*; H01L *41/04*; H04R *17/00*

U.S. Cl. 340—384 E **10 Claims**



1. A system for driving a piezoelectric transducer at an optimum frequency at which maximum output power level results, the optimum frequency known to be within a specified frequency range, said system comprising:

means for generating a feedback signal representative of transducer output power level;

a threshold detector responsive to the feedback signal and operable to generate one output signal state when the feedback signal level is below a predetermined threshold level and to generate another output signal state when the feedback signal level is above the predetermined threshold level, the predetermined threshold level selected to be lower than the maximum expected feedback signal level when the transducer is driven at the optimum frequency, and higher than the expected feedback signal level when the transducer is driven at frequencies on either end of the specified frequency range; and

a control device for periodically determining transducer optimum frequency and for driving the transducer at the optimum frequency when output is called for, said control device functional to drive the transducer at at least various frequencies within the specified frequency range for determining a pair of threshold frequency points on respective lower and upper sides of the optimum frequency, the threshold frequency points being recognized by a difference in said threshold detector output state when the transducer is driven at frequencies slightly above and slightly below each threshold frequency point, said control device functional to determine said optimum frequency as a function of said threshold frequency points, and said control device thereafter functional to drive the transducer at said optimum frequency when output is called for.

4,275,389

ELECTRICAL ASSEMBLY

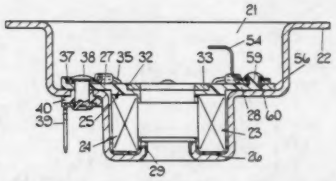
Ernest G. Hibell, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 18, 1979, Ser. No. 85,872

Claims priority, application United Kingdom, Nov. 1, 1978, 43854/78

Int. Cl.³ G08B *3/00*

U.S. Cl. 340—388 **16 Claims**



1. An electrical horn comprising a body a coil and associated armature mounted in said body, a diaphragm operatively connected with said armature, an electrical make-and-break mechanism mounted in said body, and means electrically connecting said make-and-break mechanism with said coil, wherein said electrical connecting means includes (a) a pair of electrically conducting members mounted in stacked relationship on an electrically insulating support member in said body (b) an electrically insulating post extending from said support member, an electrically conducting sleeve mounted on said post, said post and said sleeve extending through aligned apertures in said electrically conducting members and being deformed on the opposite side of the stack of electrically conducting members to said electrically insulating support member so as to secure said stack to said electrically insulating support member.

4,275,390

BURGLAR ALARM DEVICE

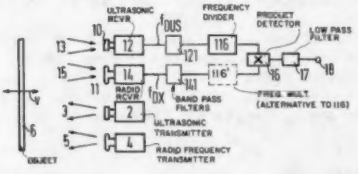
Walter Heywang, Neukeferloh; Max Guntersdorfer, Zorneding, and Peter Kleinschmidt, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 24, 1977, Ser. No. 780,806

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1976, 2613845

Int. Cl.³ G08B *13/16, 13/18, 29/00*

U.S. Cl. 340—554 **12 Claims**



1. Burglar alarm apparatus with transmitters for electromagnetic and for ultrasonic radiation respectively and with receivers for reflected electromagnetic radiation and ultrasonic radiation reflected respectively, which reflected radiations are Doppler shifted by an object moving through the radiation fields, comprising:

a demodulating electromagnetic radiation receiver for re-

ceiving the electromagnetic radiation and providing electrical signals corresponding to the Doppler frequency of the electromagnetic radiation;

a demodulating ultrasonic receiver for receiving the ultrasonic radiation and providing electrical signals corresponding to the Doppler frequency of the ultrasonic radiation; and

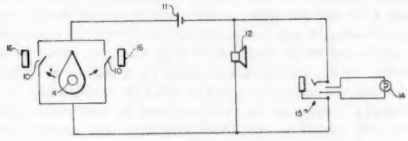
signal comparison means connected to both of said receivers and operable to produce a signal in response to the ratio of the Doppler frequency signals being determined within a predetermined tolerance width to indicate that the two Doppler frequency signals are reflected by the same object.

4,275,391

KEY CONTROLLED, POSITION SENSITIVE, PORTABLE ALARM

Okamura, Hazime, Miyazaki, Japan, assignor to Honda Lock Mfg. Co., Ltd., Miyazaki, Japan

Filed Feb. 8, 1979, Ser. No. 10,489
Claims priority, application Japan, Apr. 3, 1978, 53-38636
Int. Cl.³ G08B *13/14, 13/08*
U.S. Cl. 340—571 **5 Claims**



1. A portable alarm device comprising:

a moveable magnet in a case;

a control member settable to a hold position or a release position for respectively preventing or allowing movement of said magnet in response to movement of said case;

a locking cylinder rotatable in synchronism with said control member and actuatable to set said control member to said hold position or said release position;

an alarm circuit having magnetically sensitive switches closeable by movement of said magnet to actuate an alarm when said control member is set to said release position and said magnet moves; and

a removable key adapted to actuate said locking cylinder.

4,275,392

METHOD AND APPARATUS FOR MONITORING THE GAS VOLUME OF A HYDROPNEUMATIC STORAGE UNIT

Walter Bischofberger, Zurich, and Norbert Zeller, Ennetbaden, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

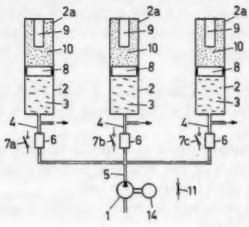
Filed Nov. 3, 1978, Ser. No. 957,068
Claims priority, application Switzerland, Nov. 4, 1977, 13429/77
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—606 **17 Claims**

1. A method for monitoring a compressible fluid volume in at least one storage unit, comprising the steps of:

pumping a relatively incompressible fluid into a first portion of the at least one storage unit with a pump to compress a relatively compressible fluid within a second portion of the at least one storage unit;

sensing that the pump is functioning to generate fluid pressure;

sensing that said relatively incompressible fluid is flowing into the at least one storage unit; and,



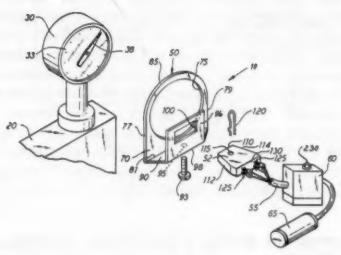
triggering an alarm whenever the flow of said relatively incompressible fluid into the at least one storage unit is interrupted while the pump is functioning.

4,275,393

METHOD AND APPARATUS FOR SENSING PRESSURE

Max M. Johnston, Russellville, Ark., assignor to Polyvend Inc., Conway, Ark.

Filed Jul. 3, 1979, Ser. No. 54,420
Int. Cl.³ G08B *21/00*; G08D *5/34*
U.S. Cl. 340—688 **2 Claims**



1. In a sensing apparatus for sensing the position of an indicator needle in a pressure gauge having an unaltered dial located behind the indicator needle, the sensing apparatus has a supporting clamp removably attachable to the gauge by a setscrew, the clamp supports a means for illumination and a light sensing means, an improvement wherein:

said clamp is formed with a planar first side with a hole therein such that the gauge is receivable within said hole, a planar base is connected at a first edge to an edge of said planar first side and is essentially perpendicular thereto, a planar second side is connected to a second edge of said base essentially parallel to said first side, said second side is positionable immediately in front of a glass cover over the indicator needle and dial of the gauge when the gauge is received within said hole in said first side, an elongated hole in said second side;

said means for illumination and said light sensing means are mounted within a shaped rigid housing and spaced with respect to one another, said housing has first and second surfaces on opposite sides thereof oriented at an angle with respect to one another;

a first region of said housing is extendable through said elongated hole in said second planar member, said first and second surfaces engage opposite edges of said elongated hole to position said housing along with said means for illumination and said light sensing means with respect to said clamp and to limit movement of said first region of said housing toward the gauge;

removable locking means to retain said housing within said elongated hole in said second planar member;

means for supplying energy connected to said means for illumination in said housing by removable connection means;

means for comparison connected to said light sensing means in said housing by said removable connection means to continuously monitor only a single indicia generated by said light sensing means, said single indicia is proportional to an amount of light generated by said means for illumination reflected off of a selected region of the unaltered dial and sensed by said light sensing means, said means for comparison compares said sensed single indicia to a preselected value, when said sensed single indicia drops below said preselected value due to the indicator needle moving between said means for illumination and the selected region of the dial, said means for comparison generates a predetermined signal;

means for latching responsive to said predetermined signal to continuously energize a means for visually signaling a selected pressure condition until said means for visually signaling is manually reset.

4,275,394

RADIO CONTROL DRIVING CIRCUIT DEVICE

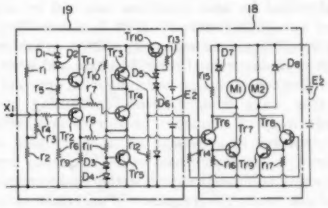
Kenichi Mabuchi, Matsudo, and Koziro Komatsu, Tokyo, both of Japan, assignors to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Sep. 11, 1979, Ser. No. 74,342

Claims priority, application Japan, Sep. 26, 1978, 53-131971[U]

Int. Cl.³ H04B *7/00*; B60K *27/00*

U.S. Cl. 340—694 **4 Claims**



1. A radio control driving circuit for use in a model device having a radio control system including two motors respectively operating two wheels of the model device and a receiver for receiving a single radio control signal for controlling the revolution of each of the two motors, said control driving circuit comprising, power transistors of the same type respectively connected in series with each of the two motors to thereby form two series circuits, a single d-c power supply for supplying energy to said two series circuits connected in parallel with each other, and a phase division circuit for dividing the single radio control signal into two signals with a 180° phase difference with each other, said phase division circuit comprising two input transistors to which the single control signal is supplied, a constant current circuit respectively connected in series with each of said input transistors, said two input transistors respectively coupled to a corresponding power transistor such that the two signals produced by said phase division circuit and applied to said power transistors control them such that one of the power transistors is kept in the OFF state when another of the power transistors is in the ON state whereby the motors operate alternately.

4,275,395

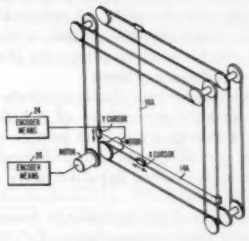
INTERACTIVE PROJECTION DISPLAY SYSTEM

Anthony G. Dewey, and Glenn T. Sincerbox, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 847,332, Oct. 31, 1977, abandoned. This application Sep. 28, 1979, Ser. No. 79,776

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—706 **9 Claims**



1. An interactive projection display system comprising:

a projection screen;

means including a light valve to provide on said screen a visible image of light rays with wavelengths within one band,

cursor means comprising first and second wires that are intersectable and independently translatable to provide on said screen a movable image of light rays with wavelengths within a different band and distinguishable from said visible image;

sensing means comprising a light pen device for detecting radiation in said different band and positionable on said screen at any one of a plurality of points on said screen, and

means for effecting a single translation of each wire in different intersecting directions for causing the respective portion of the movable image provided by each wire to move across the screen a single time and be sensed by said sensing means when the image of that respective wire passes through the point at which the light pen device is positioned, thereby providing a feedback signal to said system for determining the coordinate position of the light pen device.

4,275,396

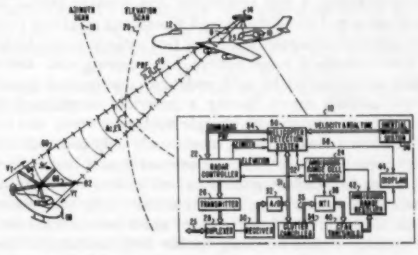
HELICOPTER ROTATING BLADE DETECTION SYSTEM

Omar J. Jacomini, Box 912, Severna Park, Md. 21146

Filed Oct. 12, 1979, Ser. No. 84,220

Int. Cl.³ G01S *13/02*

U.S. Cl. 343—5 SA **23 Claims**



6. A helicopter detection system for the radar detection of helicopters having at least one rotor blade rotating within a predetermined velocity band, said system including: a radar

transmitting unit for transmitting radar energy pulses at at least one predetermined pulse repetition frequency within a scanning purview; a radar receiving unit for receiving transmitted radar signals which are reflected from objects within said radar transmission scanning purview, said received reflected radar signals including the doppler shift frequency signals of the corresponding reflective objects; a radar clutter filtering means coupled to said receiving unit, for rejecting substantially doppler shift frequency signals of the received signals which fall within predetermined frequency bands so as to prevent further processing of said rejected signals, the reflected doppler shift frequency signals which are representative of the body velocity of said helicopter being within at least one of said predetermined doppler shift frequency bands;

a first doppler processor operative to detect the doppler shift frequency signals representative of a helicopter blade rotating in a first direction with respect to said radar transmission at a velocity in said predetermined velocity band and to provide a first signal indicative of said detection;

a second doppler processor operative to detect the doppler shift frequency signals representative of a helicopter blade rotating in a second direction with respect to said radar transmitter at a velocity in said predetermined velocity band and to provide a second signal indicative of said detection; and

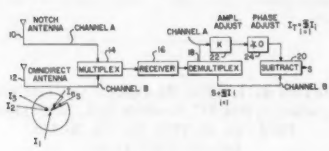
means responsive to said first and second signals to generate a third signal indicative of the presence of at least one helicopter in the scanning purview of said radar transmitter.

4,275,397

INTERFERENCE CANCELING RANDOM ACCESS DISCRETE ADDRESS MULTIPLE ACCESS SYSTEM

Frank S. Gutleber, Little Silver, N.J., assignor to The United Statesof America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1979, Ser. No. 64,160
Int. Cl.[3] H04B 7/00
U.S. Cl. 343—100 CS **5 Claims**



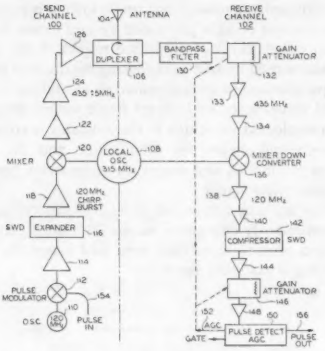
1. In a multiple access communications system, the combination comprising: a first transmitter and receiver station for transmitting and receiving desired signals and receiving undesired interference signals including, first antenna means having an omnidirectional beam pattern for receiving said desired signals accompanied by said undesired interference signals; second antenna means having a generally omnidirectional antenna beam pattern with a single notched portion, said second antenna means receiving substantially only said undesired interference signals; third means coupled to said first and second means for combining said received desired and undesired signals therefrom to produce substantially only said desired signals as an output of said system; and a second transmitter and receiver station including further first, second and third means, said second antenna means of said first and second stations being positioned with the respective notched portions directed at the source of desired signals to permit said third means to cancel said undesired interference signals.

4,275,398

FM RADIO RANGING SYSTEM

William H. Parker, and Harry T. Davidson, both of Hurst, Tex., assignors to Del Norte Technology, Inc., Euless, Tex.

Filed Apr. 6, 1979, Ser. No. 27,904
Int. Cl.[3] G01S 3/02
U.S. Cl. 343—112 R **19 Claims**



1. A trilateralization position radar locating system having secondary user capabilities, said system comprising at least a master station and a stationary station, means for transmitting at least one linear and nonlimited radio ranging signal from said master station over a radio channel to said stationary station, said radio ranging signal having a predetermined repetition rate and a preprogrammed frequency change sweeping in one direction, means in said stationary station for identifying signals directed to it jointly responsive to an identification of the repetition rate and of said preprogrammed sweep of frequency, means at said stationary station responsive to the receipt of a signal identified by said repetition rate and by said preprogrammed sweep for transmitting at least one replying radio ranging signal from said stationary station to said master station with a predetermined repetition rate and with a preprogrammed frequency change sweeping in an opposite direction, and surface wave device means for causing said preprogrammed sweep of frequency change in said radio ranging signal responsive to a passage of an interrupted oscillatory signal through said device, said sweep frequency being free of superimposed modulating signals so that said transmitted signal is free of side bands, the frequency of said radio ranging signal sweeping past the frequency bands used by other and primary equipment fast enough to isolate primary and secondary user signals without causing any appreciable interference in said other and primary equipment.

4,275,399

APPARATUS FOR DETERMINING THE DIRECTION OF ARRIVAL OF APPLIED ENERGY

Emanuel Marom, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 2, 1979, Ser. No. 63,010
Int. Cl.[3] G01S 3/28
U.S. Cl. 343—113 R **2 Claims**

1. Apparatus for determining the direction of arrival of energy applied thereto said apparatus comprising:

a first antenna pointed along a first direction for providing electrical signals indicative of energy received thereby;

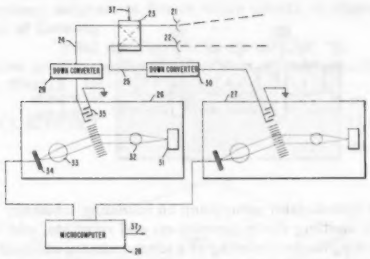
a second antenna pointed along a second direction for providing electrical signals indicative of energy received thereby;

a first integrated optic spectrum analyzer connected to receive the electrical signals provided by one of said antennas and for processing said signals so as to provide output

signals which are proportional to the intensity of energy applied to said one antenna;

a second integrated optic spectrum analyzer connected to receive the electrical signals provided by the other of said antennas, and for processing said signals so as to provide output signals which are proportional to the intensity of energy applied to said other antenna;

means for switching the coupling between said antennas and



said spectrum analyzers such that different antennas are repetitively, alternately coupled to each of said spectrum analyzers; and

computer means connected to receive the output signals from said first and second integrated optic spectrum analyzers, for processing said spectrum analyzer output signals and providing as a function thereof, a computer output signal indicative of the direction of arrival of energy received by said first and second antennas.

4,275,400

ANTENNA COIL AND ITS SUPPORT STRUCTURE MOUNTING

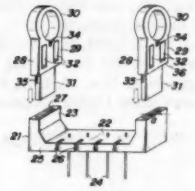
Masashi Miyakoshi, 1386 Nagata-cho, Minami-ku, Yokohama, Japan

Filed Aug. 7, 1978, Ser. No. 931,677

Claims priority, application Japan, Aug. 8, 1977, 52-106020[U]; Aug. 8, 1977, 52-106021[U]; Apr. 28, 1978, 53-58125[U]

Int. Cl.³ H01Q *1/36*

U.S. Cl. 343—788 **9 Claims**



1. An antenna coil support comprising a terminal board made of heat resisting plastic; a plurality of mountings provided on, and made integral with, said terminal board, each mounting having an axial channel opening on a top end of said mounting; and antenna supporting members made separate from said terminal board and said mountings and made of a resilient material, each supporting member having an upper part comprising an antenna supporting portion and a lower part comprising a connector portion, said connector portion of each supporting member being removably engageable with said channel of a respective mounting, said connecting portion including an engagement means and an engagement latch, said engagement means fitting into said channel and preventing removal therefrom of said connecting portion, and said engagement latch passing through said channel and said terminal board and being interconnected with a printed board to secure said printed board and said antenna coil support together.

4,275,401

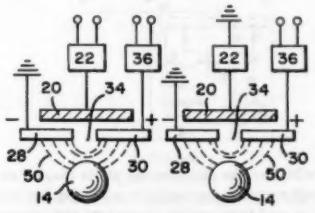
METHOD AND APPARATUS FOR SORTING AND DEFLECTING DROPS IN AN INK JET DROP RECORDER

James E. Burnett, Xenia, and John A. Robertson, Chillicothe, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 16, 1979, Ser. No. 95,175

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **19 Claims**



1. A particle trajectory control apparatus for use with a liquid particle producing apparatus which produces a continuous series of regularly spaced and uniformly sized particles on an initial trajectory from an orifice, comprising:

charging electrode means disposed adjacent said orifice for selectively placing a charge on some of said particles;

electric field generating electrode means disposed downstream from said charging electrode means and having a pair of oppositely charged surfaces disposed in a plane adjacent and parallel to said initial trajectory and defining a gap in said plane such that said surfaces are normal to and on opposite sides of a plane containing said initial trajectory, said charged surfaces supporting an electrical field across said gap through which said particles pass such that selectively sufficiently charged particles will be diverted from their initial trajectories;

at least one of said electrode means having an electrically conductive surface adjacent said plane containing said initial trajectory such that a self-induced image attractive force will be created between said conductive surface and selectively sufficiently charged particles so as to change the trajectories thereof; and

means for selectively producing charges of predetermined magnitude and sign on both said electrode means.

4,275,402

CIRCUIT ARRANGEMENT FOR TEMPERATURE-DEPENDENT VOLTAGE REGULATION OF PIEZO-ELECTRIC RECORDING NOZZLES IN INK MOSAIC RECORDING DEVICES

Hans Kern, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,841

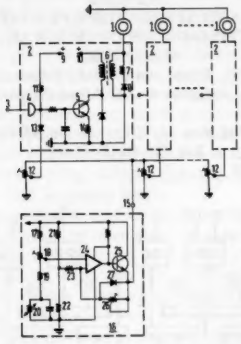
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903339

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **7 Claims**

1. A circuit arrangement for piezo-electric recording nozzles in ink mosaic recording devices to effect a temperature regulation of the control voltages therefor, comprising a control circuit for each recording nozzle, each control circuit including a voltage transformer circuit whose secondary inductance, together with the capacitance of the recording nozzle, forms an oscillating circuit, and a voltage divider having an adjustable resistor for setting the control voltage of the associated control circuit, a regulating circuit which is common to all

control circuits and is connected to said adjustable resistor thereof, said regulating circuit including regulating means and a temperature-dependent resistor for controlling said regulating means whereby the latter emits at its output an output voltage which varies in accordance with the environmental temperature at said temperature-dependent resistor.



4,275,403

ELECTRO-LUMINESCENT SEMICONDUCTOR DEVICE

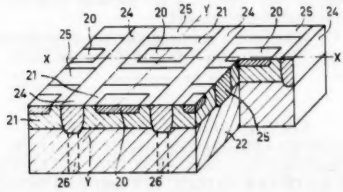
Jacques Lebailly, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 535,104, Dec. 20, 1974, abandoned, which is a continuation of Ser. No. 285,659, Sep. 1, 1972, abandoned, which is a continuation of Ser. No. 112,624, Feb. 14, 1971, abandoned. This application Nov. 25, 1977, Ser. No. 854,778

Claims priority, application France, Feb. 6, 1970, 70.04254; Feb. 6, 1970, 70.04255

Int. Cl.³ H01L *33/00*

U.S. Cl. 357—17 **22 Claims**



1. A monolithic semiconductor device comprising a semi-insulating substrate having resistivity reduced by absorption of emitted radiation, a layer of monocrystalline semiconductor material on said substrate, at least two electroluminescent elements formed separately at least partially in said layer, said electro-luminescent elements formed of two regions of different conductivity type having a pn junction between said regions, electrode means for establishing emissive radiation from said pn junctions, optical separating zones adjacent said electroluminescent elements and extending across the entire thickness of said layer to prevent emissive radiation from passing laterally in said layer, said optical separating zones having a width at least equal to three times the diffusion length of free charge carriers in said substrate.

4,275,404

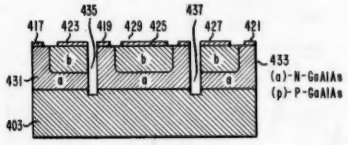
MONOLITHIC OPTO-ISOLATOR

Daniel R. Cassiday, Martinsville; Vassilis G. Keramidas, Warren; Ronald J. Roedel, Martinsville, and Robert H. Saul, Scotch Plains, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1979, Ser. No. 82,007

Int. Cl.³ H01L *31/12*

U.S. Cl. 357—19 **6 Claims**



1. An opto-isolator comprising an insulating substrate;

a light emitting diode disposed on said substrate, said light emitting diode consisting of a semiconductor material and having a first conductivity type region and a second conductivity type region, said regions forming a first p-n junction;

a photodetector disposed on said substrate, said photodetector consisting of a said semiconductor material and having a first conductivity type region and a second conductivity type region, said regions forming a second p-n junction, said photodetector spaced from said light emitting diode by a channel;

electrical contacts to said first and second conductivity type regions of said light emitting diode and electrical contacts to said first and second conductivity type regions of said photodetector;

characterized in that said semiconductor material has a graded bandgap, and said photodetector and said light emitting diode are optically coupled by said channel, said channel extending into said substrate.

4,275,405

SEMICONDUCTOR TIMING DEVICE WITH RADIOACTIVE MATERIAL AT THE FLOATING GATE ELECTRODE OF AN INSULATED-GATE FIELD-EFFECT TRANSISTOR

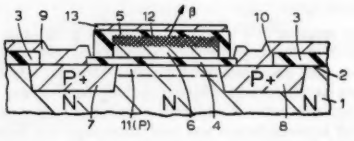
John M. Shannon, Salfords, near Redhill, England, assignor to Mullard Limited, London, England

Continuation of Ser. No. 633,118, Nov. 18, 1975, abandoned, which is a continuation of Ser. No. 433,802, Jan. 16, 1974, abandoned. This application Nov. 16, 1976, Ser. No. 742,211

Claims priority, application United Kingdom, Oct. 11, 1973, 3173/73

Int. Cl.³ H01L *29/78, 29/34;* G01T *1/24;* G04C *3/00*

U.S. Cl. 357—23 **11 Claims**



1. An insulated-gate field-effect device comprising a semiconductor body portion, a gate region spaced from the semiconductor body portion by insulating material so that, by field effect action across the insulating material, the charge state of the gate region influences a channel in which charge carriers can be made to flow in the semiconductor body portion under the gate region, and radioactive material which decays by emitting charged nuclear particles, the radioactive material

being in the gate region so that emitted particles transport charge from the gate region to progressively change with time the charge state of the gate region and the conductance in the channel.

4,275,406

MONOLITHIC SEMICONDUCTOR PRESSURE SENSOR, AND METHOD OF ITS MANUFACTURE

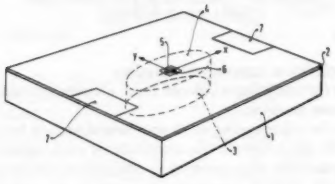
Bernt Müller, and Ulrich Theden, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,743

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841312

Int. Cl.³ H01L *27/20*

U.S. Cl. 357—26 **11 Claims**



1. Monolithic semiconductor pressure sensor comprising
a substrate (1) forming a support, formed with a cavity (3) therein;
a membrane (4) of semiconductor material spanning the cavity, and flexing when subjected to pressure, and thereby changing its electrical conductivity due to piezo-resistive effect; and
electrical piezo-resistive sensing means (R_1–R_4; T_1–T_4) sensing strain in the membrane (4),
wherein, in accordance with the invention, the membrane (4) in plan view has an elliptical shape.

4,275,407

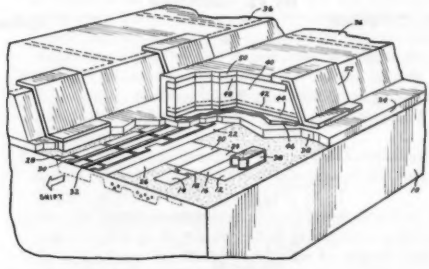
DURABLE INSULATING PROTECTIVE LAYER FOR HYBRID CCD/MOSAIC IR DETECTOR ARRAY

Robert V. Lorenze, Jr., Westford, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 829,746, Sep. 1, 1977, Pat. No. 4,196,508. This application Oct. 15, 1979, Ser. No. 84,975

Int. Cl.³ H01L *27/14, 29/78*

U.S. Cl. 357—30 **4 Claims**



1. A hybrid focal plane comprising:
a semiconductor substrate having solid state signal processing circuitry therein proximate a first surface;
a passivation layer over the first surface;
an insulator over the passivation layer, the insulator layer being of a material different than that of the passivation layer and having an essentially planar surface;
a plurality of contact pads surrounded by the insulator layer and exposed at the essentially planar surface, the contact pads extending from the essentially planar surface through the insulator layer to provide electrical contact to the solid state signal processing circuitry;
a plurality of detectors mounted on the essentially planar surface; and
electrical interconnects interconnecting the detectors with the contact pads.

4,275,408

THYRISTOR

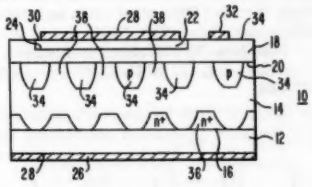
Yoshinori Yukimoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1980, Ser. No. 165,480

Claims priority, application Japan, Jul. 9, 1979, 54-87616

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **5 Claims**

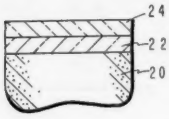


1. A thyristor comprising a body of semiconductor material, said body having major opposed top and bottom surfaces, a first emitter region of a first type conductivity, a first base region of a second type conductivity adjacent to said first emitter region, a p-n junction between said first emitter region and said first base region, a second base region of the first type conductivity adjacent to said first base region, a p-n junction between said first and said second base region, a second emitter region of the second type conductivity adjacent to said second base region, a p-n junction between said second base region and said second emitter region, a first metal electrode in an ohmic electrical contact relationship with said first emitter region, a second metal electrode in an ohmic electrical contact relationship with said second emitter region, a third metal electrode in an ohmic electrical contact relationship with one of said base regions, a plurality of gate regions having said second type of conductivity spaced apart of predetermined intervals on said p-n junction between said second base region and said first base region and protruding into said base region a predetermined distance, said predetermined distance being less than the thickness of said second base region, a plurality of highly doped regions having said second type of conductivity disposed at predetermined intervals along the p-n junction between said second emitter region and the second base region and protruding into said second base region a predetermined distance, said predetermined distance being less than the thickness of said second base region, said highly doped regions being vertically aligned with the intervals between said gate regions.

4,275,409
PHOSPHORUS-NITROGEN-OXYGEN COMPOSITION AND METHOD FOR MAKING SUCH COMPOSITION AND APPLICATIONS OF THE SAME

Pei-Ching Li, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 772,804, Feb. 28, 1977, Pat. No. 4,172,158. This application May 25, 1979, Ser. No. 42,400
Int. Cl.[3] H01L *29/40, 29/34, 23/30*
U.S. Cl. 357—54 11 Claims

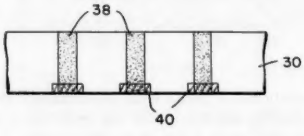


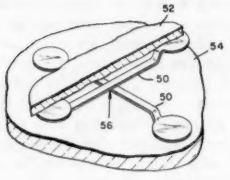
1. A semiconductor electronic structure comprising a silicon body having semiconductor devices therein and a coating composed of phosphorus-nitrogen-oxygen over at least a portion of one surface thereof.

4,275,410
THREE-DIMENSIONALLY STRUCTURED MICROELECTRONIC DEVICE

Jan Grinberg; Alexander D. Jacobson, both of Los Angeles, and Kuen Chow, Thousand Oaks, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 29, 1978, Ser. No. 964,547
Int. Cl.[3] H01L *23/48*
U.S. Cl. 357—68 6 Claims



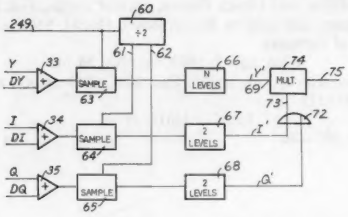


1. A three-dimensional microelectronic device comprising:
a plurality of stacked integrated circuit wafers, each comprising two dimensionally arrayed computing cells and each having top and bottom surfaces;
data bus lines contacting said cells and identically extending among all said wafers through and between each of said wafers for operating simultaneously on the parallelly transmitted data for processing thereof;
means in said wafers for transferring the parallelly transmitted data through said wafers; and
means on the surfaces of adjacent wafers interconnecting their respective cells with a topological one-to-one correspondence into an electronic function.

4,275,411
DITHER-QUANTIZED SIGNALLING FOR COLOR TELEVISION

Bernard Lippel, 39 Fairway Ave., West Long Branch, N.J. 07764

Filed Apr. 19, 1978, Ser. No. 897,860
Int. Cl.[3] H04N *9/32, 9/493*
U.S. Cl. 358—13 21 Claims

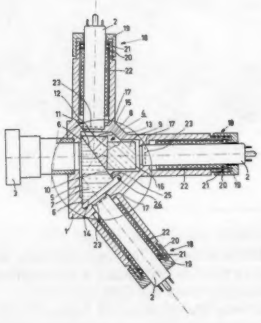


1. A television transmitter including
means for resolving a colored input picture into plural component pictures;
means for representing each component picture by a plurality of video signals, the amplitude of each signal varying substantially in proportion to component intensity in successive picture elements arranged in a predetermined scanning sequence;
means for combining one of said video signals with predetermined dither to obtain a first sum;
means for approximating with plural quantizing levels separate successive samples of the first sum;
means for combining another video signal with predetermined dither to obtain another sum;
means for approximating with two quantizing levels samples of said other sum; and
means for generating and transmitting quantized composite samples wherein the magnitude of a composite sample corresponds to an approximated sample of the first sum and its algebraic sign corresponds to an approximated sample of the other sum.

4,275,412
TELEVISION CAMERA

Cornelis J. Contant, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1979, Ser. No. 65,025
Claims priority, application Netherlands, Oct. 24, 1978, 7810582
Int. Cl.[3] H04N *5/64*
U.S. Cl. 358—55 7 Claims



7. A televison camera comprising a plurality of pickup elements positioned relative to a pickup lens by means of a holder,

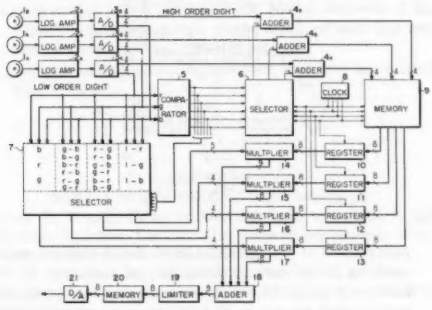
said holder having a reference face, further comprising a color splitting prism system, a front face of which is attached to the reference face of the holder, said prism system comprising at least a first prism CHARACTERIZED IN THAT the first prism is positioned in the holder by means of an abutment element attached to the holder, said abutment element engaging at least one optically flat prism face of the first prism at a number of points along a contact line which is at least substantially parallel to the front face.

4,275,413

LINEAR INTERPOLATOR FOR COLOR CORRECTION

Takashi Sakamoto, 25-1 Akesawa-Cho, Nishino Yamashina-ku, Kyoto-shi, and Akira Itooka, 26 Kamiyanagi-cho, Hirano Kita-ku, Kyoto-shi, both of Japan

Continuation-in-part of Ser. No. 891,536, Mar. 30, 1978. This application Jul. 3, 1979, Ser. No. 54,402
Int. Cl.[3] G03F *3/08*
U.S. Cl. 358—80 **11 Claims**



1. A color scanning apparatus utilizing a linear interpolating method for color signals in a memory comprising:

means for producing color separated signals (B), (R), and (G) by photoelectrically scanning an original picture;

means for converting said color separated signals to those of logarithmic values;

means for converting said logarithmic value signals to digital signals and for separating each of said digital signals into two sets of four bit address signals, one set of which is an address signal for calling color corrected signals of four bits of the higher order (for R, G and B) and the other set of which is for the lower order bits (for r, g and b);

a comparator for comparing the relative magnitudes of said lower four bit address signals and generating an output signal which is a function of said relative magnitudes;

means for monitoring the comparator output signals and determining, as a function of said relative magnitudes, to which address four bit higher order color corrected signals the quantity one is to be added;

memory means for preliminarily storing said color corrected signals corresponding to all combinations of said four bits in the higher order address signals;

means for calculating four sets of coefficients (1-r, 1-g, 1-b), (r-g, r-b, g-b, g-r, b-r, b-g), (g-b, b-g, b-r, r-b, r-g, g-r) and (b, r, g), from the lower order four bit signals and for selecting four coefficient signals from said four sets of coefficients as a function of said comparator output signals;

a plurality of multipliers multiplying each of said coefficient signals by each of the corresponding color corrected signals stored in said memory; and

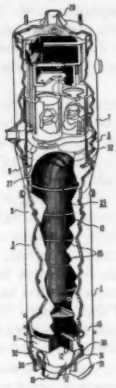
an adder for adding higher order bits obtained by the multiplication of said signals in said multipliers.

4,275,414

TUBE PLUG WELD INSPECTION APPARATUS

George W. Norris, Wilkins Twp., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 4, 1979, Ser. No. 932
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—100 **5 Claims**



1. Apparatus for inspecting annular weld areas, comprising:

a television camera having a circular camera tube input face and a circular camera input lens means in front of said input face;

an annular image transformation lens having at least one optical surface rounded in transverse cross section for radialwise magnification of annular areas of observation; and

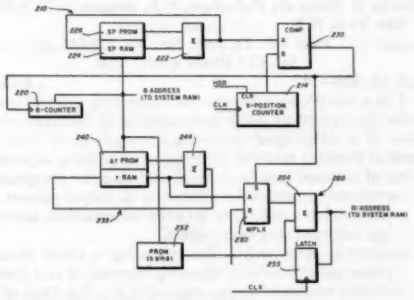
mounting means attaching said image transformation lens in coaxial spaced-apart relationship with said camera input lens means.

4,275,415

SCAN CONVERTER

Gary L. Engle, Fair Oaks, Calif., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 13, 1978, Ser. No. 960,212
Int. Cl.[2] H04N *5/02*
U.S. Cl. 358—140 **5 Claims**



1. In an imaging system of the type wherein a plurality of energy pulses are launched along respective generally radial paths in a region to be examined and reflections from discontinuities in the paths are received, the system being of the type including

video display means including a matrix of video picture

elements and means for scanning successive lines of the matrix, and

a system memory having addressable locations for storing input data in an R-θ format wherein the R co-ordinate is indicative of elapsed time between a pulse launching and reflection sampling and wherein the θ co-ordinate is indicative of the particular radial path sampled,

a scan converter for accessing the system memory locations in a sequence compatible with the scan pattern of the video display means, the scan converter comprising:

θ-co-ordinate address means responsive to respective trigger signals to sequentially address the data sets of the radial lines;

first memory means responsive to the θ-co-ordinate address means for storing switch point values indicative of the respective scan positions of the video scan means along a video line at which the data sets of a respective successive radial line is to be addressed;

means responsive to the scanning of a reference video line for initializing the switch point values in accordance with respective intersection positions of the displayed radial lines and the reference video line;

second memory means responsive to the θ-co-ordinate address means for producing first increment values respectively indicative of the changes in displayed intersection positions of the radial lines with succeeding video lines;

first summing means for updating the switch point values in accordance with the respective increments subsequent to the scanning of the switch point position;

third memory means responsive to the θ-co-ordinate address means for producing values related to respective radial distances along the radial lines;

means responsive to the scanning of a reference video line for initializing the radial distance values in accordance with the distance from the origin of the radial paths to the paths intersections with the reference video line;

fourth memory means responsive to the θ-co-ordinate address means for producing second increment values respectively indicative of radial length changes in the displayed intersection positions of the radial line with succeeding video lines;

second summing means for updating the radial distance values in accordance with respective increment values subsequent to the scanning of a respective switch point; and

comparator means for producing the trigger signal indicative of the crossing of a switch point by the video scan means.

4,275,416

PCM DETECTOR

Charles B. Dieterich, Plainsboro, N.J., assignor to RCA Corp., New York, N.Y.

Filed Feb. 28, 1980, Ser. No. 125,641
Int. Cl.³ H04N *9/493, 7/08*
U.S. Cl. 358—147 **6 Claims**

4. In a synchronous detector for recovering a digital control code represented by pulse code modulated luminance variations of a video signal occurring during selected lines of a vertical blanking interval, each line of code being adjacent to a line of constant luminance level, said detector comprising:

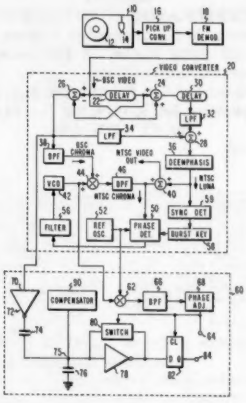
current source means for producing an output current proportional to a difference between instantaneous and average values of said video signal;

quadrature clock means for producing a clock signal in phase quadrature with signaling intervals of said code;

resettable integrator means responsive to a first level of said clock signal for integrating said current and producing an output voltage representative of the integral thereof and responsive to a second level of said clock signal for resetting and changing said output voltage to a reference level;

memory means having an input threshold level substantially equal to said reference level and responsive to the output voltage of said integrator means and to said clock signal for assuming a first logic state upon a transition of said clock signal of a given sense when said output voltage is greater than said threshold level and for assuming a second logic state upon said transition of said given sense when said output voltage is less than said threshold level; and wherein

one luminance level of said code is substantially equal to said average value of said video signal and another luminance level of said code is substantially different from said average value whereby peak-to-peak excursions of the output voltage of said integrator means tend to be asymmetrical



with respect to said threshold level of said memory means resulting in an unequal probability of detection of said luminance levels, the improvement for equalizing said peak-to-peak excursions of said integrator output voltage with respect to the threshold level of said memory means, comprising:

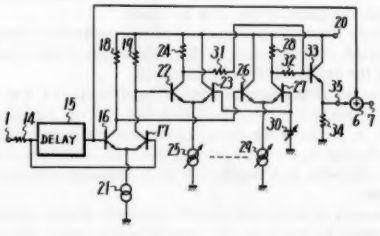
charge source means for supplying a charge to said integrator means when said clock signal is at said first level, said charge being supplied in a sense to augment the output current produced by said current source means for said one luminance level of said code.

4,275,417

APERTURE CORRECTION SIGNAL PROCESSING CIRCUIT

Tadashi Esashika, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,534
Claims priority, application Japan, Feb. 15, 1979, 54/16550
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—162 **8 Claims**



1. An aperture correction signal processing circuit comprising:

first and second differential amplifier stages, each consisting of first and second amplifying devices and each amplifying device having input, output and common electrodes;

means for providing a first aperture correction signal and a second aperture correction signal, said second aperture correction signal being polarity-inverted signal of said first aperture correction signal;

means for supplying said first and second aperture correction signals respectively to the input electrodes of the first amplifying devices of said first and second differential amplifier stages;

means for electrically connecting the input electrodes of the second amplifying devices of said first and second differential amplifier stages;

means for applying a bias voltage to the input electrodes of said second amplifying devices of the first and second differential amplifier stages;

means for changing said bias voltage;

first output means coupled to the output electrode of the first amplifying device of one of said first and second differential amplifier stages;

second output means coupled to the output electrode of the second amplifying device of the other of said first and second differential amplifier stages; and

means for adding output signals from said first and second output means.

4,275,418

VIDEO NOISE REDUCTION SYSTEMS

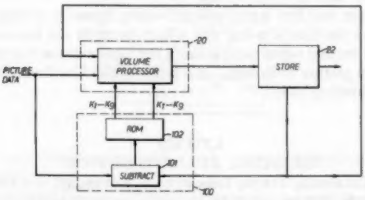
Martin R. Trump; Peter C. Michael, both of Newbury, and Richard J. Taylor, London, all of England, assignors to Micro Consultants Limited, Berkshire, England

Filed Sep. 10, 1979, Ser. No. 73,762

Claims priority, application United Kingdom, Sep. 14, 1978, 36839/78

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **13 Claims**



1. A video noise reduction system for incoming video information derived from a plurality of picture points, said system comprising:

first processing means for synthesising each picture point from incoming picture point information from adjacent picture points to provide noise reduced picture information;

storage means for storing picture point information from at least one frame;

second processing means for synthesising each picture point from incoming and stored picture point information from the corresponding picture point from a current and at least one earlier frame to effect noise reduction; and

detector means for detecting on each portion of the picture any movement between pictures to allow processing by said first processing means during portions of the picture when the picture information is moving and by said second processing means during portions of the picture when the picture information is stationary.

4,275,419

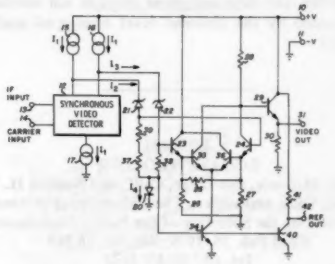
VIDEO AMPLIFIER WITH NOISE INVERSION

Milton E. Wilcox, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 28, 1980, Ser. No. 125,605

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—167 **5 Claims**



1. A video amplifier circuit comprising:

synchronous detector means having a pair of video signal outputs, said detector means normally supplying opposite phase video signals and having the characteristic of producing impulse noise outputs of a polarity opposite to that of said video signals;

first differential amplifier means having a pair of inputs coupled to said detector means outputs and a single-ended output which provides an amplified video signal;

level-shifting means connected between said detector means and said first differential amplifier means inputs;

second differential amplifier means having a pair of inputs coupled to said first differential amplifier means and cross-connected outputs coupled to said output of said first differential amplifier; and

means within said level-shifting means for providing quiescent bias in said first differential amplifier means, whereby said second differential amplifier means is inactive except when said opposite polarity noise outputs are present.

4,275,420

TELEVISION RECEIVER WITH A GHOST DETECTOR

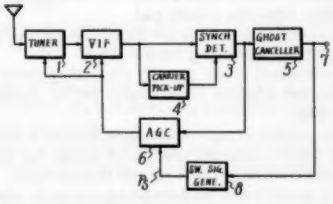
Hisafumi Yamada; Masaharu Tokuhara, and Choei Kuriki, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,143

Claims priority, application Japan, Mar. 29, 1979, 54-40977[U]

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **6 Claims**



1. A television receiver comprising:

(A) television signal receiving means including RF and IF stages;

(B) a video detector connected to said television signal receiving means;

(C) an AGC circuit connected between said video detector and said television signal receiving means for automati-

cally controlling the gain of the latter, said AGC circuit having a predetermined time constant;

(D) a ghost detector connected to said video detector for detecting a ghost signal during a certain period in a vertical blanking period of the video signal from said video detector; and

(E) switching means for switching said AGC circuit at least during said certain period in the vertical blanking period such that the detected ghost level is not substantially influenced by the transient level change of said AGC circuit.

4,275,421

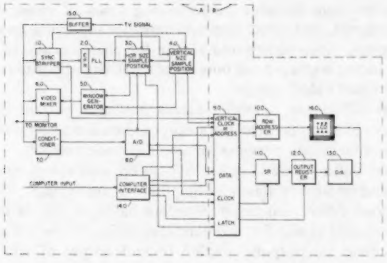
LCD CONTROLLER

Anthony C. H. Louie, San Diego, Calif., and Stephen H. Young, Fairborn, Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,269

Int. Cl.³ H04N *5/22*

U.S. Cl. 358—183 **18 Claims**



1. An apparatus for selectively visually displaying analog television and digital computer originating signals on a display panel having rows and columns of display elements comprising:

means for digitally controlling the selective visually displaying including;

means coupled to receive the television originating signals for extracting vertical and horizontal sync pulses,

means coupled to the extracting means for generating horizontal element clock pulses,

means coupled to receive the clock pulses from the generating means for determining what portion of the television signals are to be displayed,

means coupled to the determining means and to receive the television originating signals for converting at least a portion thereof from analog television signals to serial digital television signals, and

means coupled to receive the digital computer originating signals for interfacing therewith and

means connected to the digitally controlling means for effecting the selective visual display on the display panel including;

means coupled to receive the digital television signals and the digital computer originating signals for switching predetermined portions thereof therethrough,

means connected to the determining means for storing the switched signals a predetermined time,

means connected to the storing means for reconverting the switched signals from digital to analog form, and

means connected between the determining means and the display panel for selectively enabling certain rows at one time of the display elements to display the analog form of the switched signals.

4,275,422

TELECINE MACHINES

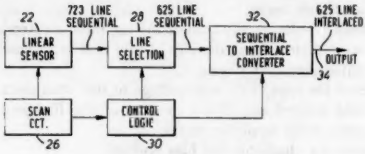
George M. Le Couteur, "Aldebaran", Rocquaine, St. Pierre du Bois, Guernsey, Channel Islands

Filed Nov. 9, 1978, Ser. No. 959,172

Claims priority, application United Kingdom, Nov. 14, 1977, 47225/77

Int. Cl.³ H04H *3/36, 7/18*

U.S. Cl. 358—214 **11 Claims**



1. A telecine machine, comprising:

a linear light sensor array;

a light source;

drive means for moving film at a constant rate between said light source and said sensor array in a direction substantially perpendicular to a plane containing said sensor array;

optical means for imaging an illuminated section of film on said sensor array; and

electronic means for deriving a television signal from said sensor array and for converting said signal from sequential to interlace form;

wherein the improvement consists in that:

said electronic means comprises first signal rate providing means for providing a first sequential-type non-standard television signal obtained by driving and scanning the film at a rate related to the film frame rate and film utilization ratio,

second signal rate providing means for electronically converting said first signal to provide a second interlaced-type standard television signal having a lower line rate from said first signal, and

wherein said first signal rate providing means is arranged to scan the film at a line rate which bears to the line rate of the second signal substantially the same ratio as the television picture utilization ratio bears to the film frame height utilization ratio.

4,275,423

ORIGINAL READING DEVICE

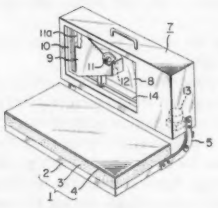
Tohru Takahashi, Tokyo; Tadashi Sato, Kokubunji, and Hirotoshi Kishi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,478

Claims priority, application Japan, Mar. 27, 1979, 54-35894

Int. Cl.³ H04M *1/04;* H04H *1/10*

U.S. Cl. 358—285 **5 Claims**



1. An original reading device for reading an original, com-

prising an original supporting portion on which an original rests with the original surface thereof to be read facing upwardly, a transparent plate provided on the original supporting surface side of said original supporting portion, original illuminating means provided on that side of said transparent plate which is opposite to the original, a photoelectric converting element, optical means for directing to said converting element the original image illuminated by said illuminating means, means for causing said optical means to scan with respect to the original surface, and a machine housing vertically movable relative to said original supporting portion and accommodating therein said transparent plate, said illuminating means, said optical means and said converting element.

4,275,424

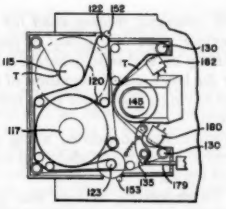
SCANNING TYPE MAGNETIC RECORDER AND CASSETTE

Alexander R. Maxey, Palo Alto, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 945,421, Sep. 25, 1978, Pat. No. 4,179,717, which is a continuation-in-part of Ser. No. 874,118, Feb. 1, 1978, Pat. No. 4,139,873. This application Jul. 5, 1979, Ser. No. 55,208

Int. Cl.³ G11B *15/66, 23/10*

U.S. Cl. 360—85 **11 Claims**



1. A scanning type magnetic tape recorder comprising:

a deck,

a rotatable scanning assembly mounted on said deck and including at least one transducer,

at least one capstan mounted on said deck in spaced relation to one side of said scanning assembly,

means connected to rotate said transducer and said capstan at correlated speeds,

a receiver for a tape cassette; and

a cassette having a supply hub and a take-up hub in spaced relation and containing a quantity of tape therebetween,

said cassette having an opening at one end of a size to fit around said scanning assembly,

a drive belt passing in contact with portions of the tape wound on both said hubs,

guides in said cassette locating a length of the tape between said hubs away from said belt and across said opening in position to form a turn around said scanning assembly in response to placement of said cassette on said deck,

and a first roller guiding a length of said belt where separated from said tape to one side of said opening for driving by said one capstan.

4,275,425

SYSTEM FOR AUTOMATICALLY TRANSFERRING INFORMATION MEDIA

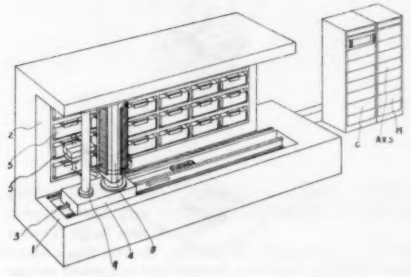
Takeo Watanabe, Suita; Tadashi Kubota, and Akio Yamagami, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1979, Ser. No. 98,036

Claims priority, application Japan, Nov. 29, 1978, 53-148369

Int. Cl.³ G11B *15/68*

U.S. Cl. 360—92 **3 Claims**



1. In a system for automatically transferring information media, the improvement comprising:

a stocker accomodating a plurality of information media as arranged in a vertical direction for delivering and receiving the media;

a rack accomodating a plurality of reproduction units arranged at least in a horizontal direction and adapted to reproduce the information recorded on the media;

handling means having an information media receiving head turnable and vertically movable and movable toward or away from the stocker and the reproduction units, for transferring the media between the stocker and the reproduction units in the rack; and

carriage means supporting the stocker and the handling means and horizontally movable to bring the receiving head to a position opposed to any one of the reproduction units in the rack.

4,275,426

FLOPPY DISC DRIVE

Paul R. Hoffman, Exton, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 12, 1979, Ser. No. 19,901

Int. Cl.³ G11B *5/016, 5/54, 25/04*

U.S. Cl. 360—99 **6 Claims**

1. A floppy disc drive assembly, with direct rotational drive, the drive assembly being contained within a housing, characterized by:

a step motor comprising a base plate which is a portion of such housing, such plate having a plurality of pairs of tabs integral therewith;

a plurality of fixed pole pairs, each pole including a coil surrounding one of said tabs such that said tabs form pole pieces;

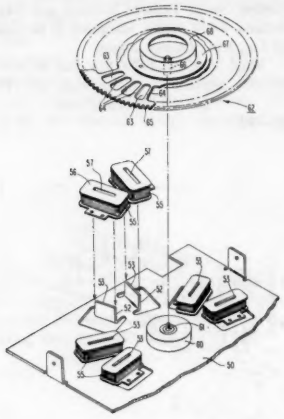
means for controlling the energization of said coils;

receiving means on said base plate centrally located relative to said pole pairs;

a disc armature mounted in and rotatable in said receiving means, said disc having a predetermined number of radial web elements of dimensions corresponding to that of said pole pieces, and at predetermined angular positions;

the relative positions of said pole pairs and said disc armature

webs being such that only a pair of said webs is in registration with only a pair of said pole pieces at a time, whereby



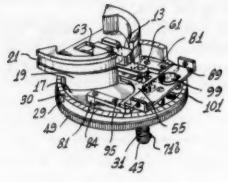
sequential energization of said poles enables operation of said motor.

4,275,427

TRANSDUCER POSITIONING APPARATUS

James Bjordahl, Arcadia, Calif., assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,238
Int. Cl.³ G11B *5/55, 21/10, 21/12*
U.S. Cl. 360—106 **16 Claims**



1. Apparatus for positioning a transducer head relative to a series of parallel tracks on a recording medium, said apparatus comprising:

a frame having means for guiding the recording medium along a predetermined path;

a cam mounted for movement on said frame, said cam having a plurality of planar steps formed therein, each of said steps corresponding to a separate track on the recording medium;

a lever having a pivot end, a mid-portion and a remote end;

means for mounting the pivot end of said lever to said frame for pivotal movement with respect thereto, with the remote end of said lever bearing on the steps of said cam; and

means coupled to the mid-portion of said lever for supporting said transducer head, said supporting means including

a platform to carry said transducer head,

means for urging said platform to engage the mid-portion of said lever, and

alignment means for maintaining a fixed angular orientation of said platform relative to said frame, whereby pivotal movement of said lever relative to said frame effects a corresponding translational movement of said platform;

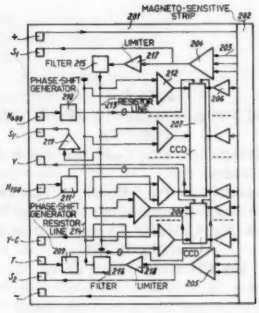
wherein movement of said cam effects a stepping movement of the remote end of said lever and, likewise, a stepping movement, of lesser magnitude, of said transducer head, to move the head along the surface of the recording medium and thereby position the head relative to the tracks on the recording medium with a precision greater than that with which the planar steps of said cam are formed.

4,275,428

MULTITRACK MAGNETIC READING HEAD

Jean-Claude Lehureau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 10, 1979, Ser. No. 101,503
Claims priority, application France, Dec. 8, 1978, 78 34648
Int. Cl.³ G11B *5/30, 5/38, 5/28*
U.S. Cl. 360—113 **4 Claims**



1. A multitrack magnetic reading head for simultaneously reading on a magnetic tape of a group of parallel tracks recorded longitudinally on said tape, wherein it comprises:

a substrate for the large scale integration of the elements of the head and having a rectilinear edge for bearing on the tape to be read;

a magneto-sensitive strip deposited along said rectilinear edge for supplying a group of electrical signals under the action of said tracks;

a first circuit for processing at least that electrical signal which corresponds to a first of the said tracks adjacent to one of the edges of the tape and for supplying a first pure sinusoidal signal;

a second circuit for processing at least that electrical signal corresponding to the last of the said tracks adjacent to the other edge of the tape and for supplying a second pure sinusoidal signal, which is phase-displaced relative to the first sinusoidal signal, the phase variation between said two sinusoidal signals measuring the skew of the head relative to the tape;

a system of amplifiers for respectively amplifying those electrical signals which are not processed in the first and second circuits to a level permitting the charging of a charge-coupled device;

at least one charge-coupled device of the parallel-series type provided with a system of input gates for receiving in parallel via the said gates at least one group of electrical signals amplified by said amplifiers and restoring them to series form at the rate of a first timing signal;

a first resistive line energized at one end by the first circuit;

a second resistive line located parallel to the first resistive line and energised by the second circuit at its end opposite to the end of the first line energized by the first circuit; and

a system of comparators connected to the resistive lines in a staggered manner for determining the sign change of the potential difference applied between the resistive lines by

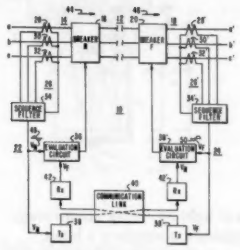
the first and second circuits and for successively opening the said input gates of the said charge-coupled device.

4,275,429

PROTECTIVE RELAY APPARATUS

Larry L. Church, Washington Twnp., Fayette County, and Shan C. Sun, Bell Twnp., Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 12, 1979, Ser. No. 84,218
Int. Cl.³ H02H *3/00, 7/26*
U.S. Cl. 361—64 **6 Claims**



1. A protective relay system for providing pilot protection for an alternating current transmission line section having circuit interrupting means at its near and far ends to be protectively controlled, comprising:

line current deriving means at the near and far ends of the line section, providing near and far composite sequence signals responsive to the magnitudes and phases of the line current at the near and far ends, respectively,

communication means communicating the far signal to the near end,

first means providing a first decision signal in response to said near and far signals which is true when the phasor difference between them exceeds a predetermined magnitude,

second means providing a second decision signal in response to said near and far signals which is true when the phase angle between them is in a predetermined range,

third means providing a third decision signal in response to said near and far signals which is true when the magnitude of the near signal divided by a predetermined constant exceeds the magnitude of the far signal;

and fourth means providing a trip signal for the circuit interrupting means at the near end when the first and second decision signals are simultaneously true, and also when the third decision signal is true.

4,275,430

DV/DT PROTECTION CIRCUIT DEVICE FOR GATE TURN-OFF THYRISTOR

Nagataka Seki, Fuchu, and Yukio Watanabe, Ikou, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 21, 1977, Ser. No. 863,047
Claims priority, application Japan, Dec. 25, 1976, 51-156945
Int. Cl.³ H02H *7/10*
U.S. Cl. 361—91 **1 Claim**

1. A dv/dt protection circuit device for a gate turn-off (GTO) thyristor which has a gate, an anode and a cathode and which is turned on in response to a gate turn-on signal and turned off in response to a gate turn-off signal from a gate turn-off (GTO) signal source, said circuit device comprising:

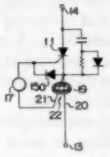
a snubber circuit connected in parallel with said GTO thyristor;

a saturable reactor connected in series with said GTO thyristor and saturated by a load current flowing through said gate turn-off (GTO) thyristor and said saturable reactor; and

means for restoring said saturable reactor to a nonsaturated condition;

wherein said saturable reactor is constituted by a ring core, a first conductor coupled to said anode of said GTO thyristor passing through said ring core, said load current flowing through said first conductor;

wherein said restoring means includes a second conductor



passing through said ring core, said second conductor coupling said gate of said GTO thyristor to said gate turn-off signal source; and

wherein a gate turn-off current from said gate turn-off signal source flowing in said second conductor produces a magnetic flux in said ring core which opposes the magnetic flux produced in said ring core by said load current flowing said first conductor;

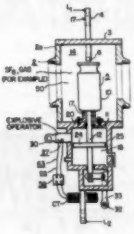
whereby said circuit device controls the dv/dt applied to said GTO thyristor at the time of turn-off.

4,275,431

HIGH-VOLTAGE SINGLE-SHOT CIRCUIT-PROTECTING DEVICE WITH FUSE-LIKE CHARACTERISTICS AND HAVING A CHEMICAL OPERATING MECHANISM

Raymond F. Swoish, Murrysville, and John J. Astleford, Jr., Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 27, 1978, Ser. No. 881,954
Int. Cl.³ H02H *3/00;* **H01H** *33/82, 73/00*
U.S. Cl. 361—93 **8 Claims**



6. A circuit-protector, comprising:

(a) means defining a generally-cylindrical insulating casing;

(b) means defining a generally-cylindrical operating mechanism casing generally constituting an extension of the aforesaid insulating casing and disposed generally on the same axis thereof;

(c) a pair of separable contacts disposed within said cylindrical insulating casing, one of which is a movable contact;

(d) an operating rod extending through one end of the insulating casing and being affixed to the movable contact at one end and a driving piston at the other end thereof, with the driving piston reciprocally operable within said extended cylindrical operating cylinder;

(e) an operating cylinder and a hollow insulating nozzle

through which the established arc is drawn being disposed upon said movable contact;

(f) a stationary piston structure supported by one closure end of said insulating cylindrical casing and having said movable operating cylinder slidable thereover;

(g) said operating rod having an extension protruding through one end of said cylindrical operating cylinder;

(h) a generally bell-crank-type manual reset lever pivotally connected to said extension of the operating rod and capable of hook-stick operation;

(i) an explosive cartridge removably disposed within a side wall of said cylindrical operating mechanism casing and capable of replacement by hook-stick operation;

(j) a current-transformer disposed adjacent said manual reset lever and sensitive to the magnitude of the current passing through the controlled circuit;

(k) a static control element energized by the current-transformer and functioning to ignite the explosive material within said explosive cartridge; and

(l) means supporting said self-contained protector unit at an adequate distance and height from ground potential.

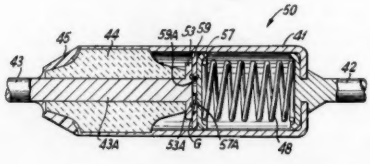
8. The combination according to claim **6**, wherein the static control circuit comprises a storage capacitor (C_1) and a resistance network (R_1, R_2) together with a rectifier connected to the current transformer to effect thereby a storage of energy within the storage capacitor (C_1), and a trigger diode in series circuit with a primer and both such elements being in parallel with the storage capacitor (C_1) so that upon triggering by the trigger diode, due to excessive current, the primer will be ignited and thereby explode the explosive material within the explosive cartridge generating gas pressure and effecting an opening operation of the puffer-type interrupter.

4,275,432

THERMAL SWITCH SHORT CIRCUITING DEVICE FOR ARRESTER SYSTEMS

John Napiorkowski, Massapequa Park, N.Y., assignor to TII Corporation, Lindenhurst, N.Y.

Filed Feb. 16, 1978, Ser. No. 878,461
Int. Cl.³ H02H *3/22, 9/04*
U.S. Cl. 361—124 **63 Claims**



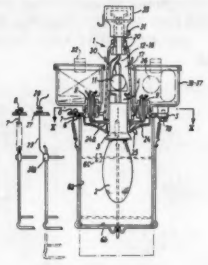
1. A unitary thermal switch comprising electrically conductive means; a pair of conductors, one of said conductors being in electrical contact with said conductive means, the other conductor being spaced from said one conductor and insulated from said conductive means; conductive plunger means in electrical contact with said one conductor and biased toward a contacting position with said other conductor; thermally fusible insulator means interposed between said plunger and other conductor, which fuses to permit said plunger means to contact said other conductor when subjected to heating to short the switch; and means defining an air gap between said conductors to protect the switch in the event of voltage overloads.

4,275,433

LIGHTING FITTING

James Caldwell, Altrincham, England, assignor to Dashglow Limited, London, England

Filed May 4, 1979, Ser. No. 36,216
Int. Cl.³ F21V *25/00*
U.S. Cl. 362—22 **16 Claims**



1. An electrical lighting fitting comprising:

(a) a lamp enclosure containing a lamp,

(b) an auxiliary enclosure containing control equipment,

(c) means for maintaining said lamp enclosure at a pressure other than ambient pressure,

(d) means in said lamp enclosure for detecting a change in pressure therein and for discontinuing electrical supply to the fitting in response to a predetermined pressure change, and

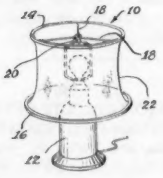
(e) means for thermally insulating the auxiliary enclosure from the lamp enclosure so as to immunize temperature increase of the control equipment due to heat from the lamp.

4,275,434

COLLAPSIBLE LAMPSHADE AND RELEASABLE ATTACHMENT MEANS

James L. Borowitz, Chicago, Ill., assignor to Bradley Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 935,335, Aug. 21, 1978. This application Jul. 30, 1979, Ser. No. 61,658
Int. Cl.³ F21V *1/06*
U.S. Cl. 362—352 **13 Claims**



1. A collapsible lampshade comprising:

an upper hoop;

means secured to said upper hoop for supporting said lampshade on said lighting fixture;

a lower hoop;

a generally tubular stretched, elastic, flexible covering extending between said upper and lower hoop whereby the weight of the lower hoop maintains a form for the lampshade as generally equal stresses result therefrom over the surface of the flexible covering; and

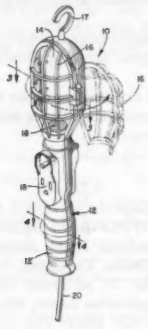
readily releasable fastening means for securing said covering to said hoops.

4,275,435

TROUBLE LIGHT

Harry M. Dorn, 2 .35 Arch Creek Dr., N. Miami, Fla. 33161

Filed Aug. 15, 1979, Ser. No. 66,707
Int. Cl.[3] B60Q *1/00*
U.S. Cl. 362—368 9 Claims



1. A trouble light guard comprising:

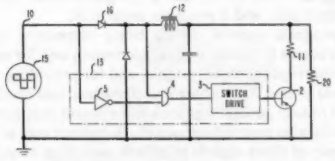
a handle portion and a reflector portion integral with said handle portion and molded as a single piece from a synthetic resin polymer.

4,275,436

CONVERTER BLEEDER CIRCUIT RESPONSIVE TO FLUX CONDITION OF FILTER INDUCTOR

William A. Peterson, Hanover Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 1, 1979, Ser. No. 62,706
Int. Cl.[3] H02M *1/14*
U.S. Cl. 363—47 5 Claims



1. A bleeder control arrangement operative to maintain current continuity in a filter inductor energized by a pulsed power source comprising

rectifying means coupling a periodic pulse signal of the pulsed power source to the filter inductor, a bleeder resistor, switching means for coupling the bleeder to the filter inductor

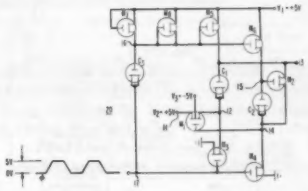
control means responsive to a voltage collapse in the filter inductor and operative to enable the switching means, said control means including inverting means for inverting the periodic pulse signal and coincidence gate means responsive to an output of the inverting means and the rectifying means and coupled to drive the switching means.

4,275,437

SEMICONDUCTOR CIRCUIT FOR VOLTAGE CONVERSION

Harry J. Boll, Berkeley Heights, and Dennis J. Lynes, Madison, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1979, Ser. No. 12,832
Int. Cl.[3] H02M *3/155, 7/155;* H03K *5/02, 3/353*
U.S. Cl. 363—60 18 Claims



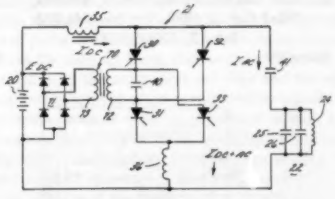
1. A semiconductor voltage converter circuit including a capacitor (C_1) having a pair of terminals each of which is connected through the source-drain path of a separate MOS transistor switch (M_3, M_5) to a separate first and second voltage source terminal (ground, V_1), for alternately connecting the disconnecting said capacitor (C_1) to said first and second voltage source terminals (ground, V_1), one of said terminals of the capacitor (C_1) being also connected through the source-drain path of a series-connected MOS transistor (M_1) to a third input voltage source terminal (V_2), the other of said terminals of the capacitor (C_1) being connected to an output node (13), the gate electrode of said series-connected transistor (M_1) being connected to another MOS transistor switch (M_4) for alternately turning "on" and "off" said series-connected transistor (M_1), characterized in that said circuit further includes a feedback loop running from the other terminal of said capacitor (C_1) through a load (M_2) back to the gate electrode of said series connected MOS transistor (M_1).

4,275,438

INDUCTION HEATING INVERTER

Robert P. Stirniman, Roselle, Ill., assignor to Induction Heating International, Inc., Chicago, Ill.

Filed Oct. 12, 1978, Ser. No. 950,834
Int. Cl.[3] H02M *7/515*
U.S. Cl. 363—136 4 Claims

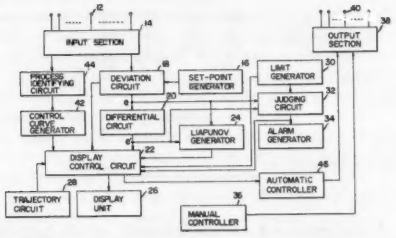


1. A power converter for converting DC power from a source to AC power in a load comprising in combination, a plurality of controlled rectifiers connected in a full-wave bridge, a commutating capacitor connected across the output of said bridge, smoothing inductance means connecting the DC source to the input of said bridge, resonating inductance means connecting the bridge to the load, blocking capacitor means connecting the DC power source and bridge to the load, means gating opposite legs of said bridge sequentially to cause bidirectional current in said load; and clamp means including a transformer having a primary winding connected across the commutating capacitor, a secondary winding and diode means connected to the secondary winding for returning power to the source.

4,275,439
PROCESS CONTROL SYSTEM

Ryuichi Kuwata, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 9, 1979, Ser. No. 3,425
Claims priority, application Japan, Jan. 24, 1978, 53-5765
Int. Cl.[3] G05B 11/16; G06F 15/46
U.S. Cl. 364—120 11 Claims



5. A process control system comprising:

set-point setting means for setting a set-point of a process variable representing a state of process to be controlled;

deviation calculation means for calculating a deviation of the process variable from said set-point and producing a deviation signal;

differentiating means for differentiating said deviation signal and producing a differential signal;

display control means for converting said deviation signal in real time and said differential signal into a phase signal representing a position, which also represents the present deviation signal and the differential signal thereof, on a phase plane formed on the basis of said deviation signal and said differential signal;

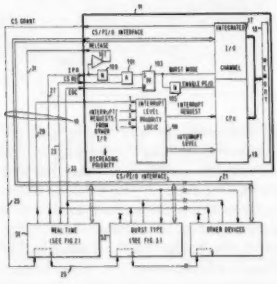
display means for displaying said phase signal; and

control means for automatically changing a controlling amount between first and second values to change the process variable to stabilize the system according to said phase signal representing a position on the phase plane.

4,275,440
I/O INTERRUPT SEQUENCING FOR REAL TIME AND BURST MODE DEVICES

Robert L. Adams, Jr., Kingston; Carl H. Grant, Woodstock, and Karl W. Stevens, Saugerties, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1978, Ser. No. 948,070
Int. Cl.[3] G06F 3/00
U.S. Cl. 364—200 4 Claims



1. In computer input/output apparatus adapted to operate in either device initiated burst mode, or programmed I/O mode, an improved interrupt sequencing apparatus comprising:

means in a first device attached to said input/output apparatus for generating an instruction priority request signal thereby indicating to said computer that immediate programmed I/O service is required and requesting a second device attached to said input/output apparatus to suspend a burst data transfer in progress;

means in said second device for generating an end of chain signal to said computer to indicate suspension of burst data transfer;

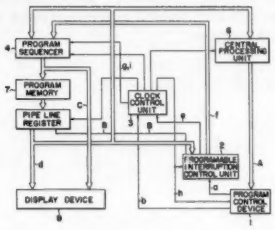
means in said computer responsive to said end of chain signal to switch said input/output apparatus to programmed I/O operation;

means in said first device responsive to a programmed I/O instruction for permitting device initiated burst mode data transfers to resume.

4,275,441
MICROPROGRAM CONTROL SYSTEM FOR MICROPROGRAM DEBUGGING

Hiroshi Takeuchi, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Mar. 27, 1979, Ser. No. 24,463
Claims priority, application Japan, Mar. 27, 1978, 53/34244
Int. Cl.[3] G06F 9/22, 11/32
U.S. Cl. 364—200 2 Claims



1. A microprogram control system for debugging microprograms comprising:

a central processing unit including memory means storing a debugging microprogram and a microprogram to be debugged, said debugging program enabling execution of a single microstep of said microprogram to be debugged as well as an operators processing request other than said single microstep execution,

a clock control unit for controllably generating clock signals which control operation of said central processing unit, a program control device, a programmable interruption control unit, and a program sequencer,

said program control device being responsive to a stop instruction from said central processing unit for producing an interruption request signal, and for providing a control signal to said clock control unit to cause said clock control unit to stop generating clock signals, said program control device also controlling said clock control unit to start the supply of clock signals to permit execution of said debugging microprogram as part of an interruption routine, said debugging microprogram executing a single microstep operation of said program to be debugged or executing an operator's request other than said single microstep operation, and then returning to a single microstep operation of said program to be debugged,

said programmable interruption control unit being responsive to said interruption request signal and an interruption permission signal for providing an interruption sequence start signal to said clock control unit to condition said clock control unit for operation in an interruption sequence, and

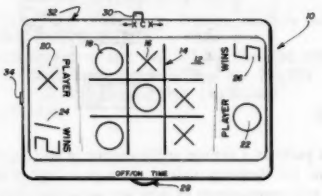
said program sequencer communicating with said central processing unit and including a storage device, said program sequencer saving the next address of said program to

be debugged into said storage device upon starting of said clock signals.

4,275,442
ELECTRONIC TIC-TAC-TOE GAME

Johnny P. Underwood, 102 Sandy La., and Carl G. Bowden, P.O. Box 294, both of Waxahachie, Tex. 75165

Filed Jul. 2, 1979, Ser. No. 53,905
Int. Cl.³ G06F *15/44*
U.S. Cl. 364—410 **16 Claims**

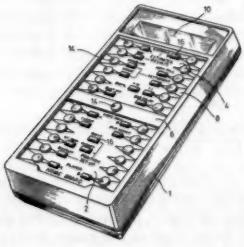


1. An electronic tic-tac-toe game, comprising:
a display board having an array of nine boxes formed by two parallel lines intersecting at right angles with two other parallel lines;
switching means for selecting a circle or cross for one of the nine boxes of the tic-tac-toe array;
display means responsive to said switching means for displaying the selected tic-tac-toe symbol in one of the boxes of said array;
an electronic digital signal processor for controlling said dislay means and for determining the end of game condition;
means for automatically clearing said display means after said electronic digital signal processor has determined the end of game condition;
means on said display board for indicating the game symbol to be used by each player; and
means for preselecting at the start of the game the game symbol to be used by each player.

4,275,443
BOARD GAME COMPUTING DEVICE

Andrei Sorin, 7 St. Dennis Dr., Suite 1107, Don Mills, Ontario, Canada (M3C 1E5)

Filed May 7, 1979, Ser. No. 36,374
Int. Cl.³ G06F *15/44*
U.S. Cl. 364—410 **7 Claims**

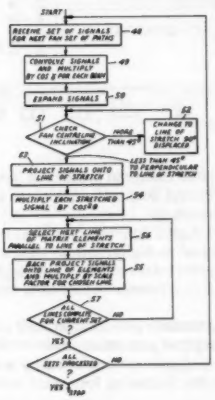


1. A backgammon calculator comprising input means in the form of a keyboard laid out on an external surface of the calculator to resemble a backgammon board with positional data entry keys on the points and bar of the board, and additional function keys at locations other than on the points and bar, output means in the form of a digital display visible from outside the calculator, and data processing means in the form of a microcomputer having random access and read only memories, the read only memory of the microcomputer being programmed with routines selected by a first group of said function keys to accept data from said positional data entry keys so as to enter said data in said random access memory whereby to record therein the number of men of each colour on each point and the bar in a playing position in a game of backgammon, and with routines selected by a second group of function keys, located on said keyboard other than on the points or bar, to perform calculations related to the probable subsequent progress of the game and to display the results of said calculations on said digital display.

4,275,444
ARRANGEMENTS FOR CONSTRUCTING REPRESENTATIONS OF PARTS OF BODIES

John L. Ryan, Chalfont St. Peter, England, assignor to EMI Limited, Hayes, England

Filed May 9, 1979, Ser. No. 37,919
Claims priority, application United Kingdom, May 12, 1978, 19148/78
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—414 **8 Claims**



1. An apparatus for processing signals derived from a computerized tomographic scanner and relating to attenuation suffered by x-radiation on traversing each of many substantially linear paths across a cross sectional slice of a body under examination, said scanner supplying the signals in groups relating to sets of paths, the paths of each set diverging from a focus and the focus for each set being disposed at a different angular location relative to the cross-sectional slice and the signals in each group being supplemented as required by signals, formed by interpolation between the first mentioned signals, to represent attenuation for divergent paths not actually irradiated, the processing apparatus including: a matrix store having a plurality of locations each of which is allocated to one of a plurality of elemental regions of the body, said elemental regions being disposed in a rectangular array in said slice; means for selecting and distributing to the locations of the matrix store contributions from the signals, both measured and interpolated, relating to paths traversing the corresponding elemental regions of the body; means operative prior to the selection and distribution of the said contributions for weighting each contribution from the signals of a group by a factor related to Cos θ raised to a selected power, where θ is the angle between the path corresponding to the signal from which the contribution was derived and the perpendicular to a plurality of parallel lines of the elemental regions; and scaling means arranged to scale the contributions being distributed to storage locations corresponding to one of said parallel lines by a scaling factor chosen for that line such that the contributions distributed to each

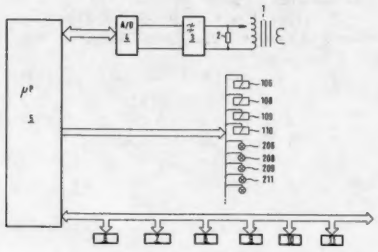
location for the line have, after weighting by said factor related to Cos θ and the scaling factor, been weighted by 1/D raised to the same power as Cos θ, where D is the distance between the elemental region corresponding to the location, and the focus for the respective group.

4,275,445

DELAYED ACTION ELECTRICAL PROTECTION DEVICE, DEPENDING ON AN ADJUSTED MAGNITUDE

Rodolfo Di Pietro Elizaran, Bilbao, Spain, assignor to Arteche, Instrumentacion y Systemas Electronicos, S.A., Spain

Filed Apr. 5, 1979, Ser. No. 27,252
Claims priority, application Spain, Apr. 13, 1978, 468.764
Int. Cl.[3] H02H *3/08*
U.S. Cl. 364—480 **7 Claims**



1. A delayed action electrical protection device intended for protection of electrical lines and equipment against electrical disturbances comprising:

(a) an analog-to-digital converter for converting an adjusted monitored signal to digital format signal;

(b) a micro-processor for receiving said digital format signal and relating it to reference values from timing characteristic curves;

(c) said micro-processor providing at least one relay tripping signal for electrical protection; and

(d) said tripping signal being delayed by a varying amount according to the following formula:

$$t_a=(K/i^2-1)$$

wherein

t_a=the delay time for actuating said tripping signal

$i=(I/I_n)$

I=the actual current of the monitored signal

I_n=a preset reference value of current

and

K=a predetermined constant.

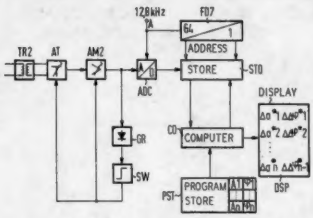
4,275,446

METHOD AND APPARATUS FOR MEASUREMENT OF ATTENUATION AND DISTORTION BY A TEST OBJECT

Gerhard Blaess, Olching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 88,091
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1978, 2849119
Int. Cl.[3] H04B *3/46*
U.S. Cl. 364—487 **17 Claims**

14. Apparatus for measuring the transmission characteristics of an object under test, comprising, in combination, first storage means located near the input of said object under test, said first storage means storing a plurality of sampling values corresponding to the magnitude, at consecutive time intervals, of a test pulse formed of a plurality of individual components at a plurality of frequencies, means connected to said first storage means for reading out said sampling values from said first storage means in succession, and for applying them to said input, second storage means located near the output of said object under test, said second storage means storing values corresponding to the initial phase angles of all of the components of said test pulse, means for sampling sequential intervals



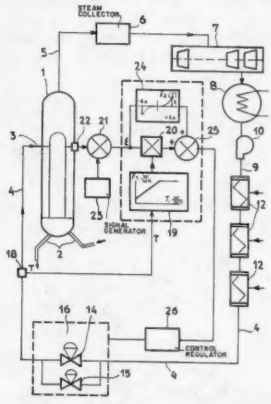
of the test pulse as it arrives at the output of said device under test, means for deriving values corresponding to the phase angles of said components as they are presented at the output of said device under test, and means connected to said second storage means for comparing said derived values with the values stored in said second storage means.

4,275,447

METHOD OF REGULATION OF THE WATER LEVEL IN BOILERS OR STEAM GENERATORS

Pierre Ruiz, Le Blanc Mesnil, France, assignor to Framatome, Courbevoie, France

Filed May 11, 1979, Ser. No. 38,304
Claims priority, application France, May 25, 1978, 78 15505
Int. Cl.[3] G06F *15/52, 15/46;* G21C *7/00*
U.S. Cl. 364—494 **4 Claims**



1. A method of regulation of the water level in a steam generator during the course of operation and more particularly during the starting-up phase, consisting of the steps of:

measuring the water level in the steam generator,

generating a signal representing the difference ξ between the real measured level of water in the steam generator and a reference level,

generating a first control signal proportional to the signal representing ξ, the proportionality factor or gain being a linear function of the power level of the steam generator with respect to its nominal power,

generating a second control signal representing the value—for values of ξ within a restricted range spanning the value zero —of a non-linear function preserving very low values

for low values of ξ and increasing very rapidly for higher values of ξ within the restricted range,

modifying said first control signal with said second signal so as to increase the total gain for low power levels and high values of ξ within the restricted range, and

controlling a device for feeding water to the steam generator, with said modified control signal.

4,275,448

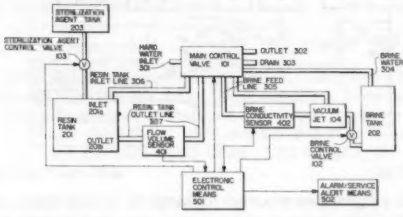
ELECTRONIC MEANS FOR CONTROLLING THE REGENERATION OF RESINS IN A RESIN TYPE ION EXCHANGE DEVICE

Guy Le Dall, Rueil-Malmaison, France, assignor to Permo, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 963,261, Nov. 24, 1978. This application Jan. 30, 1980, Ser. No. 116,779

Int. Cl.³ G06F *15/46*; C02F *1/42*

U.S. Cl. 364—500 **25 Claims**



1. In a resin-type ion exchange apparatus of the type for removing objectionable ions from a fluid by passing the fluid through a resin in a resin tank, said resin requiring periodic resin regeneration by backwashing the resin with a fluid, brining the resin with a regeneration agent dissolved in a fluid, and rinsing the resin with a fluid, and having at least one electrically actuable valve selectively placable in a backwashing state, a brining state, a rinsing state or a normal operation state, the improvement of an electronically controllable system comprising:

flow volume sensor means for generating a flow volume signal indicative of the volume of fluid passing through said resin;

a memory means for storing therein a predetermied backwashing flow volume, a predetermined brining flow volume, a predetermined rinsing flow volume, at least one further predetermined value, a predetermined value loading program, a regeneration initiation program and a regeneration sequence control program comprising at least the steps of backwashing the resin with said predetermined backwashing flow volume of fluid, brining said resins with said predetermined brining flow volume of a regeneration agent dissolved in a fluid and rinsing said resin with said predetermined rinsing flow volume of fluid;

a microprocessor calculating means connected to said at least one electrically actuable valve, said flow volume sensor means and said memory means, for loading at least some of said predetermined backwashing flow volume, said predetermined brining flow volume, said predetermined rinsing flow volume and said at least one further predetermined value into said memory means according to said predetermined value loading program, for initiating resin regeneration according to said regeneration initiation program and said at least one further predetermined value, and for controlling said resin regeneration by application of valve control signals to said at least one electrically actuable value (1) for placing said at least one electrically actuable valve in said backwashing state until said flow volume signal indicates said predetermined backwasing volume of fluid has passed through said resin tank, (2) for placing said at least one electrically actuable valve in said brining state until said flow volume signal indicates said predetermined brining volume of fluid has passed through said resin tank, (3) for placing said at least one electrically actuable valve in said rinsing state until said flow volume signal indicates said predetermined rinsing volume of fluid has passed through said resin tank, and thereafter (4) for placing said at least one electrically actuable valve in said normal operation state; and

a programming means connected to said microprocessor calculating means for application of at least some of said predetermined backwashing flow volume, said predetermined brining flow volume, said predetermined rinsing flow volume and said at least one further predetermined value to said microprocessor calculating means for storing in said memory means.

4,275,449

MODELLING ARRANGEMENTS

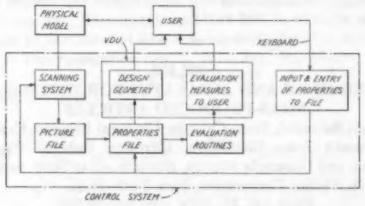
Roslyn R. Aish, Winchester, England, assignor to National Research Development Corporation, London, England

Filed Apr. 30, 1979, Ser. No. 34,667

Claims priority, application United Kingdom, Apr. 28, 1978, 16930/78

Int. Cl.³ G06F *13/00*; G09B *25/04*

U.S. Cl. 364—512 **40 Claims**



1. A modelling arrangement of a quantity of changeably interengageable elements, some at least being of forms distinct from others, for selective assembly together, a said element having a distinctive form also including information storage means to store machine readable information identifying the distinctive form, said elements having portions to provide interengagements with other elements and information transfer means effective to transfer stored information from element to element, whereby interengaged elements provide a linked information transfer network for the transfer of machine readable information indicating the arrangement of the interengaged elements.

4,275,450

MAGNIFICATION/DEMAGNIFICATION APPARATUS AND METHOD

Jerry L. Potter, Massillon, Ohio, assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1979, Ser. No. 62,607

Int. Cl.³ G06F *15/20*; H04N *1/04*

U.S. Cl. 364—515 **9 Claims**

1. Apparatus for selectively controlling the size of the output image formed from a series of image pixels, comprising, in combination:

(a) a first register programmable with a count representing the image size selected;

(b) an accumulator coupled to said first register for receiving the count in said first register;

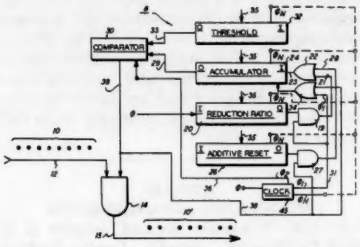
(c) a second register programmable with a count representing image threshold level;

(d) comparator means for comparing the counts in said accumulator and said second register;

(e) pixel control means for regulating passage of said image

pixels from an input line to an output line in response to the signal output of said comparators means; and

(f) timing means for successively introducing the count from said first register into said accumulator and actuating said comparator means to compare the count in said accumulator with the threshold count in said second register for each of said image pixels, said comparator means producing an enabling signal when the count in said accumulator is greater than the count in said second register, whereby said pixel control means passes the image pixel being processed from said input line to said output line, said pixel control means preventing passage of the image pixel being processed from said input line to said output line in the absence of said enabling signal.



4,275,451
METHOD OF AND APPARATUS FOR TESTING OF MASS-PRODUCED ARTICLES

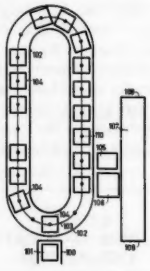
Giovanni Balzarini, Sesto-Calende; Giovanni Buccino, Crenna di Gallarate; Jules Gnadeberg, Gavirate; Roberto Papeschi, Milan, and Giancarlo Slavich, Besozzo, all of Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 18, 1979, Ser. No. 58,582

Claims priority, application Italy, Aug. 2, 1978, 26402 A/78

Int. Cl.[3] **G06F** *15/46*

U.S. Cl. 364—580 **10 Claims**



7. Apparatus for testing an article within a series of articles during an automatically controlled driving thereof through a predetermined series of program steps for simulating a cycle of operational use thereof, said apparatus comprising a conveyor means having an input position and an output position and a plurality of positioning means each for accommodating an article, electric power means having a plurality of outlets each corresponding to one of said positioning means for providing electric power to an article, a plurality of sensing means having a corresponding plurality of sensing inputs each corresponding to one of said positioning means for measuring at least one operational condition of an article placed thereat, a plurality of separate electronic storage means each assigned to one of said positioning means for storing an output signal from a sensing means corresponding thereto, and data processing means provided at a predetermined data output position of said apparatus, said data processing means having an input thereto for temporarily connecting an output of a digital electronic storage means as being presented at said predetermined data output position for therefrom receiving stored signals, said data processing means furthermore having an output for outputting a representation of a test date.

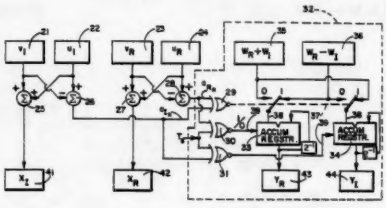
4,275,452
SIMPLIFIED FAST FOURIER TRANSFORM BUTTERFLY ARITHMETIC UNIT

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 8, 1979, Ser. No. 92,387

Int. Cl.[3] **G06F** *15/332, 7/54*

U.S. Cl. 364—726 **9 Claims**



1. In a digital-data processor for sampling the time history of a time-varying signal as an input time series to determine the fourier coefficients of an equivalent fast fourier transform (FFT) of said time history, high-speed means for performing the fast fourier transform butterfly arithmetic and comprising:

a pair of storage means, each for storing a respective one of the sums (W_R+W_I) and the differences (W_R-W_I) of the complex FFT butterfly weighting coefficients W_R and W_I as sets of phase-shifted cosine values;

a pair of selectively additive and subtractive accumulating registers, each selectively responsive to an alternative one of said sums and differences of said weighting coefficients stored in said pair of storage means; and

exclusive-NOR logic switching means responsive to preselected state conditions of a sampled epoch input to said butterfly arithmetic unit for preselectively controlling said pair of accumulating registers whereby a respective component of the complex weighted butterfly output function occurs at the output of a respective one of said accumulating registers in response to the applied sums and differences of said complex butterfly weighting coefficients.

4,275,453
SMOOTHING FILTER FOR DIGITAL TO ANALOG CONVERSION

Charles A. Wagner, North Edwards, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

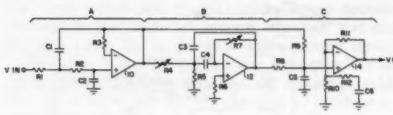
Filed Jan. 25, 1980, Ser. No. 115,536

Int. Cl.[3] **H03H** *11/12;* **H04B** *15/00*

U.S. Cl. 364—825 **9 Claims**

1. An electronic filter for smoothing the stepped signal from a digital-to-analog converter comprising three active filter sections, each having an input terminal and an output terminal, and said third section having two input terminals for receiving the signals at output terminals of said first and second sections, said first section having a noninverting low-pass filter transfer function, said second section having its input terminal connected to the output terminal of said first section, said second section having an inverting transfer function designed to pass a narrow frequency band centered at the step frequency of said

stepped output signal with sharp cutoff on either side of said band, and said third section having one input terminal connected to the output terminal of said second section and one input terminal connected to the output terminal of said first



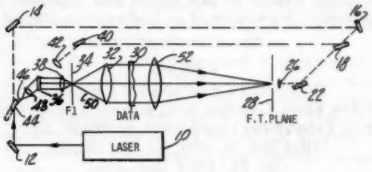
section for summing the signals at output terminals of said first and second sections, said third section having a noninverting lead-lag transfer function designed to reduce the phase angle between the signal at its output terminal and the stepped signal at the input of said first section.

4,275,454

OPTICAL SYSTEM PHASE ERROR COMPENSATOR

Alex Klooster, Jr., Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Dec. 1, 1978, Ser. No. 965,277
Int. Cl.[3] G06G *9/00*; G02B *27/22*; G03H *1/16*
U.S. Cl. 364—861 **12 Claims**



1. A method of compensating for phase errors in an optical data processing system having a plurality of lenses for displaying the Fourier transformation of optical data contained in a data source, said method comprising:

generating a reference and object beam from a coherent light source;

passing the object beam in a given direction through the lenses and data source of the data processing system;

using a low frequency spatial filter to pass only low frequency components of the object beam incident said data source;

directing the filtered object beam and reference beam to an optical memory;

storing the interference pattern between the object beam and the reference beam in the optical memory as a hologram whereby low spatial frequency phase errors of the system are recorded; and

reading the data from the data source by providing a read beam incident said memory along a path in the reverse direction of the reference beam, with the hologram stored in the memory providing a reconstruction beam which passes back through the same lenses and through the data source opposite to said given direction to a plane at which the Fourier transformation of the data is displayed, thereby compensating for the phase errors in the system data source and lenses.

8. A system for compensating for phase errors in an optical data processing system having a data source and lens means for directing a source coherent light through the data source to perform a Fourier transformation thereof, said system comprising:

a source of a beam of coherent light;

beam splitter means for splitting said beam to provide a reference beam and an object beam;

optical memory means for storing patterns of light, with said data source and lens means being disposed between said memory means and said beam splitter means along the path of said object beam whereby said object beam passes through the data source and lens means;

a low frequency spatial filter disposed between the data source and the memory means for passing only low frequency components of the object beam to the memory wherein a hologram is formed therein of the phase errors created by imperfections in the data source and lens means;

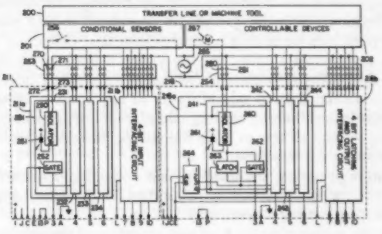
read means interposed upstream from said beam splitter for selectively intercepting the beam from the light source and providing a read beam to said memory means along a path anti-parallel to the reference beam, with said hologram providing a reconstruction beam projecting along a path anti-parallel to the object beam back through the same data source and the lens means for displaying the Fourier transformation of the data while compensating for the phase errors in the system.

4,275,455

OUTPUT INTERFACE CARD SUITABLE FOR USE WITH A PROGRAMMABLE LOGIC CONTROLLER

Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldridge, Iowa

Division of Ser. No. 814,836, Jul. 11, 1977, Pat. No. 4,178,634.
This application Apr. 2, 1979, Ser. No. 26,427
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—900 **5 Claims**



1. An output interface card suitable for electrically isolating at least four outputs of an electronic device from at least four corresponding loads controlled by the electronic device comprising:

(a) four card data inputs suitable for connection to the four outputs, respectively, of the electronic device;

(b) four card data outputs suitable for connection to the four corresponding loads, respectively;

(c) four output interface circuits each of which includes a corresponding one of said card data inputs and card data outputs, and each of which contains:

(1) an isolator capable of handling a load of at least 2 amperes at 110 volts, said isolator having its output coupled to the corresponding card data output,

(2) a latch producing and retaining at its output the signal appearing at its input when enabled through a latch enable input, said latch having its input connected to the corresponding card data input and having its output connected to the input of said isolator, and

(3) a gate for producing at its output the signal present at its input only when enabled through a gate enable input, said gate having its input connected to the output of said latch and having its output connected to the input of said latch;

(d) means connecting in parallel all of said latch enable inputs of said four output interface circuits; and

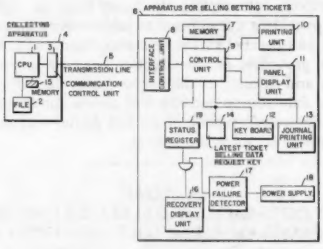
(e) means connecting in parallel all of said gate enable inputs of said four output interface circuits.

4,275,456

BETTING TICKETS SELLING AND COLLECTING SYSTEM

Takehiko Tanaka; Yoji Kubota, both of Kawasaki, and Kiyoshi Kubomura, Yokohama, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,912
Claims priority, application Japan, Aug. 16, 1978, 53-99628
Int. Cl.³ G06F *11/00, 15/02, 15/28*
U.S. Cl. 364—900 **8 Claims**



1. A processing system for use in a betting tickets selling and collecting system when a power failure occurs, said betting tickets selling and collecting system including a plurality of apparatuses for selling betting tickets comprising an input unit for inputting betting information and a ticket issuing unit for issuing tickets in accordance with said betting information and a collecting apparatus operatively connected to said plurality of apparatuses for selling betting tickets, said collecting apparatus comprising a collecting file which is updated by receiving said betting information and means for sending ticket selling command data to said plurality of apparatuses for selling betting tickets, thereby causing said plurality of apparatuses for selling betting tickets to issue the betting tickets, wherein the improvement comprises:

a storage means, included in said collecting apparatus for storing the latest selling ticket data for each apparatus for selling betting tickets; and

means, included in each of said plurality of apparatuses for selling betting tickets, for sending a message to said collecting apparatus after a power failure has occurred at one of said plurality of apparatuses for selling betting tickets and power has been restored, wherein said message is a request for the stored latest selling ticket data for the particular apparatus for selling betting tickets.

4,275,457

APPARATUS AND METHOD FOR RECEIVING DIGITAL DATA AT A FIRST RATE AND OUTPUTTING THE DATA AT A DIFFERENT RATE

Robert O. Leighou, Lakewood, and Leighton A. Meeks, Littleton, both of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

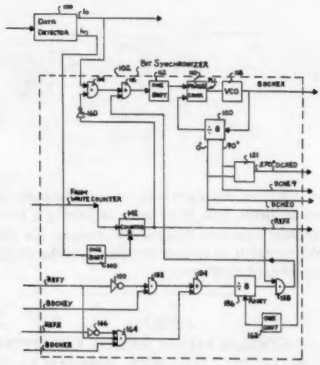
Division of Ser. No. 798,187, May 18, 1977, Pat. No. 4,173,014. This application Oct. 22, 1979, Ser. No. 87,425
Int. Cl.³ G11B *5/43*
U.S. Cl. 364—900 **3 Claims**

1. Apparatus for providing a periodic clock signal in timed relation to digital data being provided along a first information channel, comprising:

means for deriving a primary timing signal directly from said digital data, said primary timing signal occurring in close timed relation to said digital data except when said information channel is degraded;

means for deriving an alternate timing signal also occurring in timed relation to said digital data, though less closely than said primary timing signal;

means for determining whether the degradation exceeds a predetermined amount in said information channel and for providing a timing control signal in accordance therewith; and,



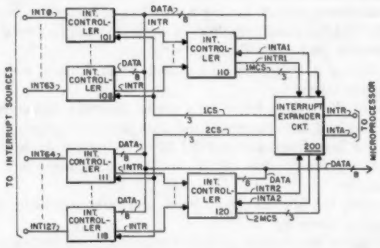
means for providing said periodic clock signal having timing corresponding to either said primary timing signal or said alternate timing signal in dependence upon said timing control signal whereby said periodic clock signal occurs in timed relation to said digital data regardless of the amount of degradation of said information channel.

4,275,458

INTERRUPT EXPANDER CIRCUIT

M. Ibrahim Khera, Glendale, Ariz., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 14, 1979, Ser. No. 103,756
Int. Cl.³ G06F *9/46, 3/00*
U.S. Cl. 364—900 **9 Claims**



1. An interrupt expander circuit for use in a microprocessor system, said interrupt expander circuit connected between a microprocessor central processing unit and first and second interrupt controllers, said first interrupt controller connected to a first plurality of interrupt controllers and said second interrupt controller connected to a second plurality of interrupt controllers, each of said interrupt controllers operable to transmit an interrupt request signal, said first and said second pluralities of interrupt controllers connected respectively to first and second pluralities of interrupt sources each of said sources operable to generate an interrupt request signal, said interrupt expander circuit comprising:

a clock circuit operable to generate periodic pulses of a predetermined frequency;

first latching means connected between said first interrupt controller and said microprocessor and connected to said clock circuit, said first latching means operated in re-

sponse to said interrupt request signal of said first interrupt controller to produce a first output signal for transmission to said microprocessor indicating the detection of an interrupt request and further operated to produce a second output signal;

second latching means connected between said microprocessor and said second interrupt controller and connected to said clock circuit, said second latching means operated in response to said interrupt request signal of said second interrupt controller to produce a first output signal for transmission to said microprocessor indicating the detection of an interrupt request from said second plurality of interrupt sources and further operated to produce a second output signal;

first gating means for inhibiting the operation of said second latching means, said first gating means connected between said first latching means and said second latching means, whereby in response to simultaneous interrupt request from said first and second interrupt controllers a third output signal is generated to inhibit said operation of said second latching means and said third output signal is further produced in response to said second output signal of said first latching means;

second gating means for inhibiting said operation of said first latching means, said second gating means connected between said first and said second latching means and operated in response to said second output signal of said second latching means to provide a fourth output signal for inhibiting said operation of said first latching means;

said interrupt expander circuit further includes means operated in response to an interrupt acknowledge signal from said microprocessor to provide a fifth output signal for transmission to said first interrupt controller and alternatively to provide for transmission of said fifth output signal to said second interrupt controller;

said first interrupt controller operated in response to said fifth output signal to operate one of said plurality of interrupt controllers and alternatively said second interrupt controller operated in response to said fifth output signal to operate one of said second plurality of interrupt controllers, whereby when simultaneous interrupts occur the interrupt source connected to said first interrupt controller is serviced first but before any subsequent interrupts from said first interrupt controller are serviced the interrupt presented by said second interrupt controller will be serviced.

4,275,459

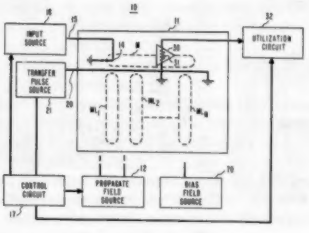
MAGNETIC BUBBLE DETECTOR ARRANGEMENT

Paul C. Michaelis, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 23, 1980, Ser. No. 162,373

Int. Cl.³ G11C *19/08*

U.S. Cl. 365—8 **7 Claims**



1. A magnetic bubble memory including a layer of material in which magnetic bubbles can be moved along a propagation path to a detector stage, said detector stage comprising a plurality of elements of magnetically soft elements stacked along an axis transverse to said path and interconnected to provide an electrically conducting path for currents applied thereto, alternate ones of said plurality of elements being oriented at a first angle with respect to the axis of said propagation path, the remaining ones of said plurality being oriented at a second angle greater than said first angle.

4,275,460

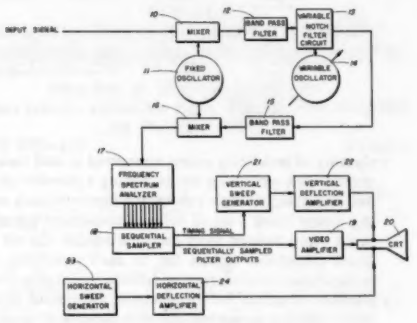
REAL-TIME AUDIO SPECTRUM ANALYZER

John P. Zirbel, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 26, 1966, Ser. No. 582,798

Int. Cl.³ G01S *15/32*

U.S. Cl. 367—102 **2 Claims**



1. In a continuous-transmission, frequency-modulated sonar system, a propeller modulation enhancement and display system which processes and displays propeller modulation of a return sonar signal including a hull echo signal in real-time, comprising:

a multichannel frequency spectrum analyzer covering the frequency spectrum of interest,

means for sequentially sampling the individual outputs of said frequency spectrum analyzer,

a long persistance CRT having the intensity of its electron beam modulated by the output of said sequentially sampling means thereby providing a visual indication of the relative strengths of the signal components in said return sonar signal,

means synchronized with said sequentially sampling means for vertically sweeping the electron beam of said CRT and thereby establishing the frequency axis of the resultant CRT display,

means for horizontally sweeping the electron beam at said CRT and thereby establishing the time axis of the resultant CRT display, and

means preceding said multichannel frequency spectrum analyzer for suppressing the hull echo in said return sonar signal.

4,275,461

PARALLEL DIGITAL BEAM-FORMING SYSTEM

Leon Sternick, Plainview, and John D. Lea, Huntington Station, both of N.Y., assignors to The United States of America as represented by the Sectetary of the Navy, Washington, D.C.

Filed Dec. 5, 1966, Ser. No. 599,995

Int. Cl.³ G01S *3/80*

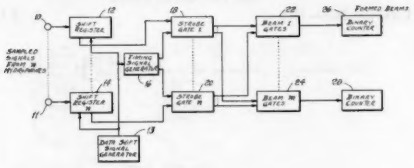
U.S. Cl. 367—122 **2 Claims**

1. A parallel digital beam-former for use with an array of signal transducers comprising, in combination:

a plurality of time-delay means, the number of said delay means being equal to the number of said transducers, each delay means being connected to receive as an input the output of a different one of said transducers and delaying said output in a series of increasing amounts;

means connected to said delay means for causing said delay means to periodically and simultaneously sample the outputs of said transducers;

means connected to said delay means for obtaining from each of said delay means a plurality of outputs comprising the series of increasingly delayed transducer signals, all outputs from a given delay means being simultaneously obtained, the series of outputs from any delay means being obtained at a different time than that from any other delay means, all delay means being tapped for their outputs before the next sampling of the outputs of the transducers;



a plurality of serializing means connected to said time-delay means, each serializing means, having a plurality of inputs and providing a single output, the inputs to each serializing means being a set of delayed transducer signals, one input being derived from each transducer, the set of delayed transducer signals fed to each serializing means being chosen to conform to a different beam direction; and

a plurality of means for transforming the output signals of said serializing means into signals indicative of beam signal strength, each transforming means being connected to a different one of said serializing means.

4,275,462

ELECTRONIC TIMEPIECE

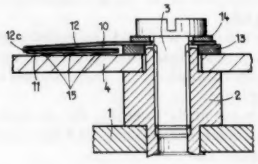
Jean Schaad, Gorgier, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Mar. 11, 1980, Ser. No. 129,406

Claims priority, application Switzerland, Mar. 16, 1979, 2502/79

Int. Cl.³ G04C *23/02*

U.S. Cl. 368—88 **3 Claims**



1. In an electronic timepiece having an insulating substrate carrying a plurality of conductive tracks, an adjustable capacitor comprising:

a first electrode of said capacitor formed by a first conductive area on said substrate;

an arm;

an insulating plate rigidly secured to said arm and having a first and a second substantially flat face;

a second electrode of said capacitor formed by a second conductive area on the first face of said plate; and

means for pivotally mounting said arm for movement between a first end position where said second conductive area is substantially parallel to, and substantially completely overlaps said first conductive area, and a second end position where there is substantially no overlapping between said first and second conductive areas, whereby the capacitance of said capacitor depends on the position of said conductive area between said first and second end positions.

4,275,463

ELECTRONIC TIMEPIECE

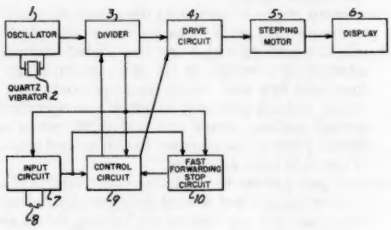
Takashi Ishida, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,170

Claims priority, application Japan, Jul. 19, 1978, 53-88053

Int. Cl.³ G04C *9/00*

U.S. Cl. 368—187 **3 Claims**



1. In an electronic timepiece having a stepping motor and controllable means for driving the motor alternatively at a normal frequency and a relatively faster correction frequency, the improvement comprising: manually actuatable switching means; and means connected to said controllable means and responsive to two successive actuations of the switching means within a first predetermined time period for causing said controllable means to effect a change in the motor drive from the normal frequency to the correction frequency and responsive to a third actuation of the switching means after a second predetermined time period from said change for causing said controllable means to effect return of the motor drive to the normal frequency.

4,275,464

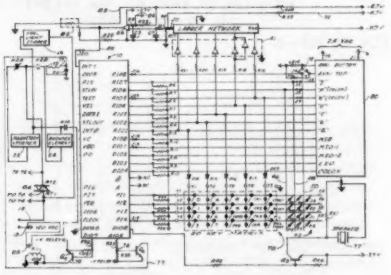
UNIVERSAL SELF-DIAGNOSING APPLIANCE CONTROL

David J. Schmidt, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 16, 1979, Ser. No. 12,744

Int. Cl.³ G06F *11/22, 11/32*

U.S. Cl. 371—15 **27 Claims**



1. An electronic controller having a plurality of appliance function controllers, a digital display, a microprocessor controler comprising at least one internal random access memory and a plurality of internal registers, and further including, external to said microprocessor controller, electrical input and output conductors for said plurality of appliance function controllers, a diagnostic test signal conductor connected to

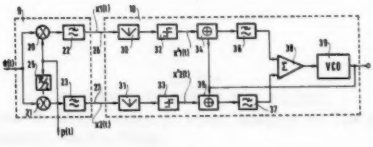
said microprocessor controller, a single plug connector to which said input and output conductors and said diagnostic test signal conductor are connected in circuit, said plug connector and having releasable connections for each of said conductors, a corresponding mating connector releasably engageable with said single plug connector and having releasable connections that match the releasable connections of said single plug connector, said mating plug connector including extension conductors from said input and output conductors to the respective appliance function controllers associated with each input and output conductor, a dummy plug connector releasably engageable with said single plug connector in place of said mating plug connector, said dummy plug connector containing leads which cross connect said input and output conductors and which place a signal on said diagnostic test signal conductor to thereby alter the electrical interconnection of said conductors in said single plug connector, and means in said microprocessor controller interconnecting said random access memory, said internal registers, and connected to said digital display, and responsive to signals on said diagnostic test signal conductor to internally check electrical conductivity integrity of said input and output conductors and of said internal microprocessor random access memory and of said internal microprocessor registers and operative to generate a unique digital code in said digital display indicative of an unsatisfactory check of electrical integrity and the location among said input and output conductors and said microprocessor random access memory and registers at which said unsatisfactory check occurred.

4,275,465

CLOCK RATE RECOVERY CIRCUIT

Michel Lemoussu, Saint Michel sur Orge, France, assignor to Compagnie Industrielle des Telecommunicators Cit-Alcatel, Paris, France

Filed Oct. 30, 1979, Ser. No. 89,390
Claims priority, application France, Nov. 7, 1978, 78 31466
Int. Cl.³ H04B *1/10*; H03K *9/02*
U.S. Cl. 375—97 **3 Claims**



1. A clock rate recovery circuit for a data transmission system using linear modulation and including a receiver with a synchronous demodulator (9) having two carriers in quadrature and having two outputs, namely an in-phase output (26) and a quadrature output (27), the said circuit comprising:

a first rectifier (30) connected to the in-phase output (20) of the demodulator (9);

a second rectifier (31) connected to the quadrature output (27) of the demodulator (9);

a first two-input/one-output multiplier (34) having one of its inputs connected to the output of the first rectifier (30) and its other input connected to the output of a voltage-controlled oscillator (39);

a second two-input/one-output multiplier (35) having one of its inputs connected to the output of the second rectifier (31) and its other input connected to the output of the said voltage-controlled oscillator (39);

a first low pass filter (36) connected to the output of the first multiplier (34);

a second low pass filter (37) connected to the output of the second multiplier (35);

a two-input/one-output summing circuit (38) having one of its inputs connected to the output of the first low pass filter (35) and its other input connected to the output of the second low pass filter (37); and

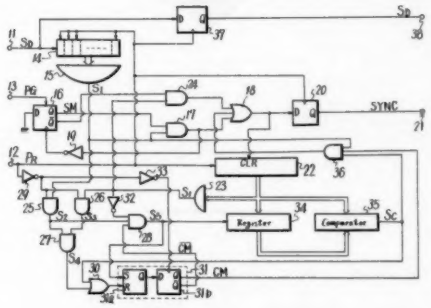
the said voltage-controlled oscillator (39) having a control input connected to the output of the summing circuit (38) and an output delivering a signal at the frequency of the recovered clock rate and connected to one of the inputs of both the first and the second multipliers (34 and 35).

4,275,466

BLOCK SYNC SIGNAL EXTRACTING APPARATUS

Kaichi Yamamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 98,770
Claims priority, application Japan, Dec. 12, 1978, 53-153885
Int. Cl.³ H04L *7/06*
U.S. Cl. 375—113 **9 Claims**



1. An apparatus for extracting a sync signal from a digital information signal consisting of a plurality of successive blocks each consisting of N successive bits (where N is an integer) and each having a sync portion consisting of a predetermined sync bit pattern and a data portion, said apparatus comprising:

sync pattern detecting means for detecting the occurrence of said sync bit pattern in said information signal and for generating a detected sync signal upon the detection of such an occurrence;

counting means for providing a count having a successive one of N cyclical count values in response to each successive bit of said information signal and for generating a counted sync signal every time said count has a predetermined one of said N cyclical count values; and

check mode means for memorizing said count of said counting means when said detected sync signal is generated other than in conjunction with the generation of said counted sync signal and for generating a checked sync signal when a subsequent detected sync signal is generated the next time after the memorization of said count that said counting means equals said memorized count, and for changing the count in said counting means when said checked sync signal is generated so that said counted sync signal will be generated after the counting of each N successive bits of said information signal which follow said subsequent detected sync signal.

DESIGNS

JUNE 23, 1981

259,595

SHOE SOLE

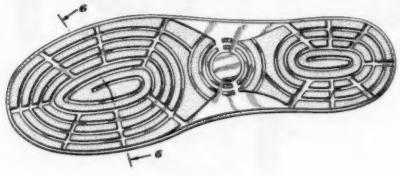
Joseph P. Famolare, Jr., Putney, Vt., assignor to Famolare, Inc., New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,919

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—320



259,596

CARRYING CASE FOR A RAZOR

Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 1, 1979, Ser. No. 62,887

Term of patent 14 years

Int. Cl. D3—*02*

U.S. Cl. D3—39

259,597

OTTOMAN

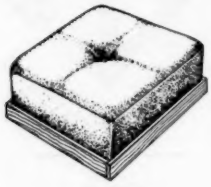
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157

Division of Ser. No. 823,966, Aug. 12, 1977. This application Sep. 21, 1979, Ser. No. 77,634

Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—36



259,598

CHAIR OR SIMILAR ARTICLE

Hermann Locher, Pfeffingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland

Filed Jan. 26, 1979, Ser. No. 7,149

Claims priority, application Switzerland, Jul. 31, 1978, 67346/78

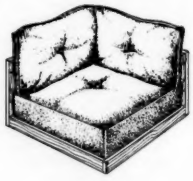
Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—75

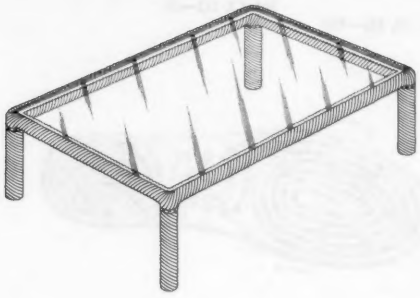
259,599
SEAT OR SIMILAR ARTICLE
Betty T. Credicott, 547 W. Empire St., Freeport, Ill. 61032
Filed Mar. 8, 1978, Ser. No. 884,721
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

259,600
CORNER SEAT
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Division of Ser. No. 823,966, Aug. 12, 1977. This application Sep. 21, 1979, Ser. No. 77,641
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

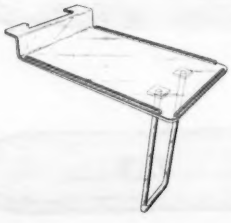


259,601
CHAIR
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Division of Ser. No. 823,966, Aug. 12, 1977. This application Sep. 21, 1979, Ser. No. 77,790
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—76

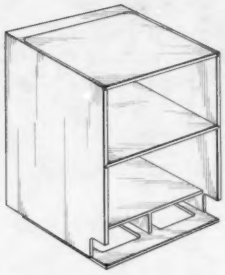
259,602
TABLE
Marcello Mioni, 9833 San Cir., Beverly Hills, Calif. 90210
Filed Aug. 7, 1978, Ser. No. 932,105
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



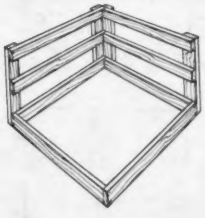
259,603
TABLE FOR USE PRIMARILY ON A BOAT
Yves Gagnon, 848, Marie-Anne, Montreal, Quebec, Canada (H2J 2A9)
Filed Apr. 11, 1979, Ser. No. 28,996
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



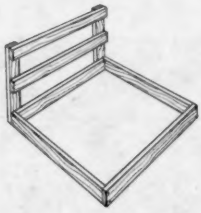
259,604
MODULAR CABINET BOX
Michael Schuler, Edison; Harvey B. Mandel, North Brunswick, and John E. Studer, Flemington, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Jul. 19, 1978, Ser. No. 926,065
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



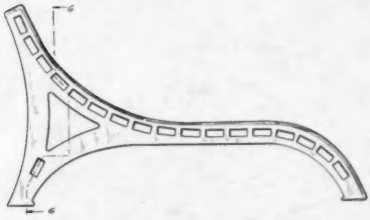
259,605
CORNER SEAT FRAME
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Division of Ser. No. 823,965, Aug. 12, 1977. This application Sep. 21, 1979, Ser. No. 77,603
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



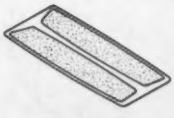
259,606
CHAIR FRAME
Robert J. Marks, 9350 SW. 106th St., Miami, Fla. 33157
Division of Ser. No. 823,965, Aug. 12, 1977. This application Sep. 21, 1979, Ser. No. 77,614
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



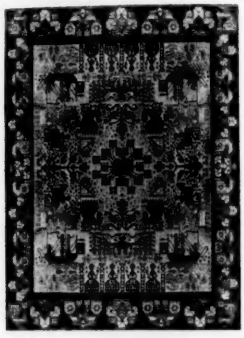
259,607
END STANDARD FOR A LOUNGE SEAT
Otto Stahl, Jr., Cedar Grove Rd., Annandale, N.J. 08801, and William Koelbel, 4 S. Merrell St., Geneva, N.N.Y. 14456
Filed May 21, 1979, Ser. No. 40,691
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—195



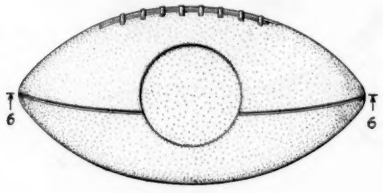
259,608
MAT FOR A BATHING FACILITY OR THE LIKE
Henry M. Stairs, Jr., Neshanic, and Jan Leviton, East Brunswick, both of N.J., assignors to American Standard Inc., New York, N.Y.
Filed May 11, 1979, Ser. No. 37,973
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



259,609
ORIENTAL RUG
Eduard Katzer, Wuppertal; Werner Brinkmann, Ulm/Donau, and Gerhard Wehner, Gehrden, all of Fed. Rep. of Germany, assignors to Vorwerk & Co. Teppichwerke GmbH & Co. KG., Wuppertal, Fed. Rep. of Germany
Filed Mar. 28, 1979, Ser. No. 24,777
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—210

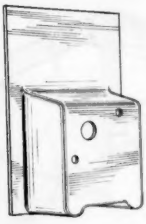


259,610
SIMULATIVE PHOTO FRAME
Nick P. Martin, 438 Cresent, Santa Maria, Calif. 93454
Filed Feb. 4, 1980, Ser. No. 118,469
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—245



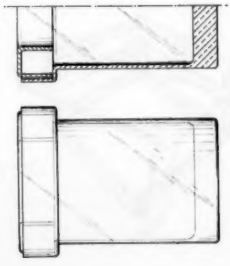
259,611
SIMULATIVE PHOTO FRAME
Nick P. Martin, 438 Cresent, Santa Maria, Calif. 93454
Filed Apr. 14, 1980, Ser. No. 140,234
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—245

259,612
MUSIC BOX ENCLOSURE FOR A PICTURE FRAME OR THE LIKE
Clyde M. Wagner, 325 E. Stocker, Glendale, Calif. 91207
Filed May 19, 1978, Ser. No. 907,870
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—246

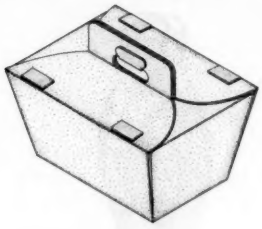


259,613
COFFEE DECANTER
Kin C. Sun, Kowloon, Hong Kong, assignor to Kin Hip Metal & Plastic Fty. Ltd., Kowloon, Hong Kong
Filed Feb. 14, 1979, Ser. No. 12,176
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—64

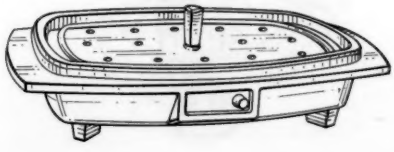
259,614
WINE COOLER
Nicholas P. Angelakos, Staten Island, N.Y., assignor to Lancaster Colony Corporation, New York, N.Y.
Filed Jun. 18, 1979, Ser. No. 49,521
Term of patent 14 years
Int. Cl. D07—*07, 06*
U.S. Cl. D7—70



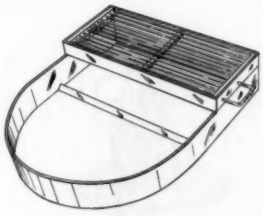
259,615
PORTABLE COOLER
George A. Morris, Jr., 720 Fair Oaks Manor, Atlanta, Ga. 30327
Filed Jun. 25, 1979, Ser. No. 51,529
Term of patent 14 years
Int. Cl. D07—*99*; D09—*03*
U.S. Cl. D7—76



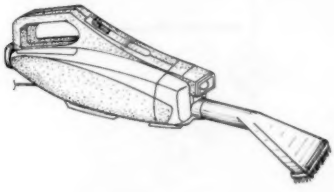
259,616
SAUSAGE COOKER
David L. Painter, Glenview, Ill., and Russell D. Hiatt, West Bend, Wis., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 1, 1979, Ser. No. 44,450
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—94



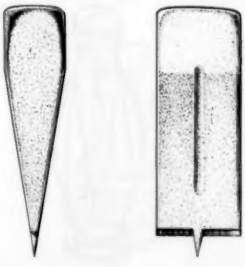
259,617
CAMPFIRE GRILL
Vance P. Braxton, III, Lesterville, Mo. 63654
Filed Nov. 28, 1979, Ser. No. 98,209
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



259,618
HAND-HELD VACUUM CLEANER WITH LIGHT
Suen S. Tack, Hong Kong, Hong Kong, assignor to Bon Aire Industries, Inc., Signal Hill, Calif.
Filed Oct. 27, 1978, Ser. No. 955,406
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—164



259,619
WEDGE
William H. Nicholson, Sutton, Mass., assignor to Norman S. Blodgett, Worcester, Mass., a part interest
Filed Sep. 29, 1978, Ser. No. 947,719
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—47



259,620
FASTENING DEVICE FOR TIE DOWN STRAPS ON TARPAULINS AND THE LIKE
Walter Johnsen, Aurelia, Iowa 51005
Filed Aug. 17, 1979, Ser. No. 67,430
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—394

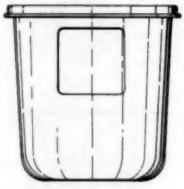
259,621
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,922
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—307

259,622
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,920
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—310

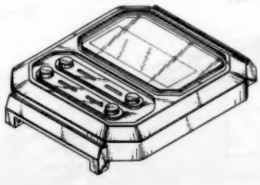
259,623
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,918
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—311

259,624
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,917
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—318

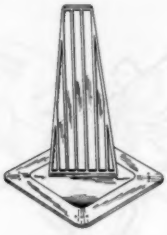
259,625
CONTAINER FOR ICE CREAM OR OTHER PRODUCTS IN BULK
Robert S. Hamilton, and John R. Sneeden, both of Columbus, Ohio, assignors to Liqui-Box Corporation, Columbus, Ohio
Filed Dec. 26, 1978, Ser. No. 556
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—428



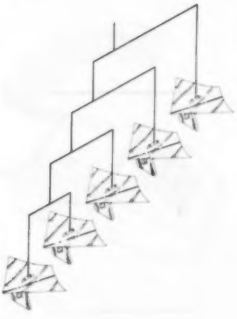
259,626
DIGITAL WRIST WATCH OR THE LIKE
Masao Wada, Mitaka, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Jul. 12, 1978, Ser. No. 924,216
Claims priority, application Japan, Feb. 10, 1978, 53-4374
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



259,627
HIGHWAY SAFETY MARKER
Milton G. Moravek, P.O. Box 412, Grand Island, Nebr. 68801
Filed Feb. 2, 1979, Ser. No. 8,889
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



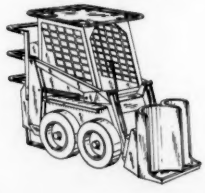
259,628
MOBILE
Andre Jacobs, 24 rue Fernand Neuray, Ixelles, Belgium
Filed Sep. 20, 1978, Ser. No. 943,984
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D11—141



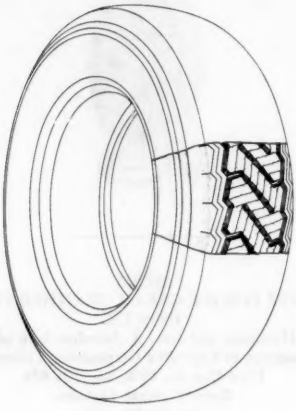
259,629
COMBINED PLANTER AND WATERING DEVICE
Rean O. Titus, 4436 Mt. Elliott, Detroit, Mich. 48207
Filed Sep. 7, 1979, Ser. No. 73,548
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—144

259,630
HORSEMAN FIGURE
Charles A. MacLean, 23073 Beech, Dearborn, Mich. 48124
Filed Apr. 25, 1979, Ser. No. 33,127
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—159

259,631
ANIMAL CARCASS HANDLING VEHICLE OR SIMILAR ARTICLE
William S. Ramacciotti, 13603 Q St., Omaha, Nebr. 68137
Filed Mar. 9, 1979, Ser. No. 19,092
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—57

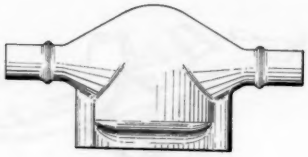


259,632
TIRE
Guy Amarger, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Oct. 16, 1978, Ser. No. 951,842
Claims priority, application France, Apr. 25, 1978, 78 558
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

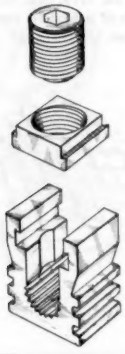


259,633
VEHICLE CONSOLE UNIT
James P. Butler, Lewisville, Tex., assignor to Affiliated Hatch and Sunroof, Inc., Dallas, Tex.
Filed Oct. 30, 1978, Ser. No. 956,077
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

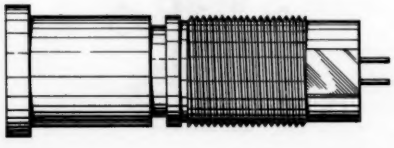
259,634
INSULATOR COVER
Melvin E. Clutter, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.
Filed May 18, 1979, Ser. No. 40,130
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—17



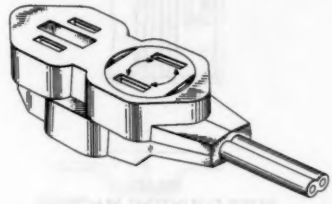
259,635
CONNECTOR ASSEMBLY FOR A WIRE CONDUIT
Merle A. Plummer, North Hollywood, Calif., assignor to Myers Electric Products, Inc., Montebello, Calif.
Filed Jun. 20, 1978, Ser. No. 917,300
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



259,636
STUFFING TUBE FOR PASSING ELECTRICAL CURRENT THROUGH BULKHEADS
Frederik K. Coppell, Barrington, R.I., assignor to FKC Engineering Co., Pawtucket, R.I.
Filed Jan. 22, 1979, Ser. No. 5,455
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24

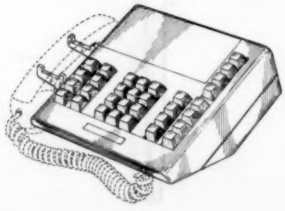


259,637
ELECTRIC CORD CONNECTOR
Robert L. Martin, Coventry, and Donald F. Smith, Warwick, both of R.I., assignors to General Electric Company, New York, N.Y.
Filed May 23, 1979, Ser. No. 41,562
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30

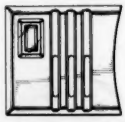


259,638
TELEPHONE SUBSET
Roberto Della Giovanna, Milan, Italy, assignor to International Standard Electric Corporation, New York, N.Y.
Filed May 18, 1978, Ser. No. 907,225
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

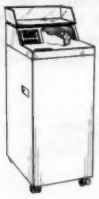
259,639
TELEPHONE DESK SET
Larry Anthony, Gilroy, and Wayne Kasom, Jr., San Francisco, both of Calif., assignors to Rolm Corporation, Santa Clara, Calif.
Filed Sep. 5, 1978, Ser. No. 939,621
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—58



259,640
INDICATOR FOR CAMERA
Kazuaki Takata, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan
Filed Dec. 29, 1978, Ser. No. 974,320
Claims priority, application Japan, Jul. 6, 1978, 5328496
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—10

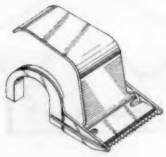


259,641
NOTE COUNTING MACHINE
Isamu Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan
Filed Feb. 23, 1979, Ser. No. 14,492
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—3

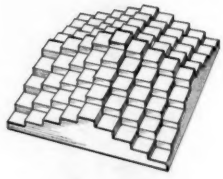


259,642
BALL POINT PEN
Francine Gomez, Paris, France, assignor to Waterman, S.A., Paris, France
Filed Jun. 5, 1979, Ser. No. 45,736
Claims priority, application France, Dec. 6, 1978, 77096
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

259,643
TAPE DISPENSER
Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 17, 1979, Ser. No. 30,825
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69

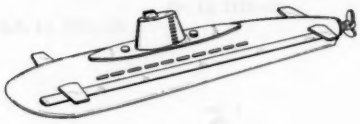


259,644
THREE DIMENSIONAL GAME BOARD
Leonard H. Israel, 817 20th St., Apt. 103-S, Santa Monica, Calif. 90403, and Perry J. Grant, 727 Ocampo Dr., Pacific Palisades, Calif. 90272
Filed Oct. 15, 1979, Ser. No. 84,812
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—23



259,645
TOY BALANCE
Masami Shiraishi, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jun. 1, 1978, Ser. No. 911,676
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—102

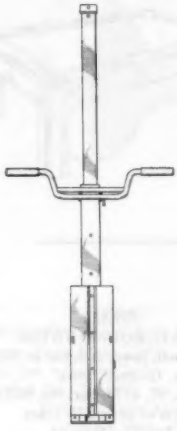
259,646
TOY SUBMARINE
Herbert P. Grimberg, 20357 Baltar St., Canoga Park, Calif. 91306, and Richard Seifried, Jr., 13022 Barto Dr., Granada Hills, Calif. 91344
Filed Jul. 26, 1979, Ser. No. 61,240
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—130



259,647
SKATEBOARDING FIGURINE TOY
Osamu Takahashi, Gardena, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 15, 1979, Ser. No. 3,272
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—150

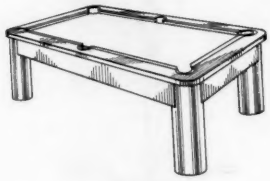
259,648
HOBBY HORSE FIGURINE TOY
Osamu Takahashi, Gardena, Calif., assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jan. 15, 1979, Ser. No. 3,270
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—181

259,649
EXERCISER
Tim M. Uyeda, Los Angeles County, Calif., assignor to Marcy Gymnasium Equipment Company, Alhambra, Calif.
Filed Jan. 23, 1979, Ser. No. 5,694
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195



259,650
TENNIS RACKET FRAME
Stephen E. Fiott, Nashua, N.H., assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France
Filed Dec. 5, 1978, Ser. No. 966,760
Claims priority, application France, Jun. 8, 1978, 78 441
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

259,651
POOL TABLE
Arnold Kaye, Westport, Conn., assignor to Irving Kaye Company, Inc., Stamford, Conn.
Filed Jul. 30, 1979, Ser. No. 62,144
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232

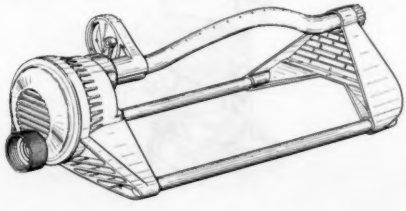


259,652
PLAYGROUND SWING
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Oct. 19, 1978, Ser. No. 952,859
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246

259,653
TENT
Maxwell W. Day, 401-5 Little Bourke St., Melbourne, Victoria, Australia
Filed Jul. 12, 1978, Ser. No. 923,981
Claims priority, application Australia, Jun. 13, 1978, 75042
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

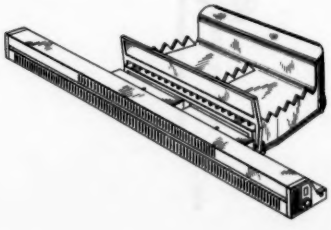
259,654
POLE CAP FOR TENT
Kaichi Baba, No. 6-18, 1-chome, Zoshigaya, Toshima-ku, Tokyo, Japan
Division of Ser. No. 830,487, Sep. 6, 1977, Pat. No. Des. 253,296. This application Feb. 23, 1979, Ser. No. 14,312
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—254

259,655
SPRINKLER
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy
Filed Dec. 26, 1979, Ser. No. 106,511
Claims priority, application Italy, Jun. 26, 1979, 21949/79[U]
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—8



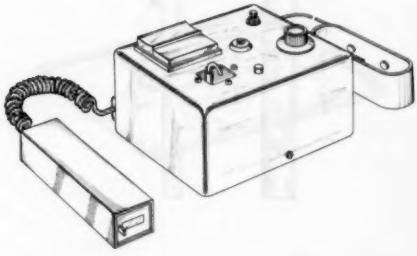
259,656
COMBINED DRAINBOARD AND SINK SUPPORT OR SIMILAR ARTICLE
Cornelis M. Alfrink, Born, Netherlands, and René L. E. van Gasse, Opglabbeek, Belgium, assignors to Teewen, B.V., Tegelen, Netherlands
Filed Dec. 22, 1977, Ser. No. 863,578
Claims priority, application Netherlands, Jun. 22, 1977, 5197401; Jun. 22, 1977, 5197402; Jun. 22, 1977, 5197403; Jun. 22, 1977, 5197406; Jun. 22, 1977, 5197407
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69

259,657
FORCED AIR FIREPLACE FURNACE
Thomas V. Metz, Portland, and W. James Sirois, Beaverton, both of Oreg., assignors to Pacific Fireplace Furnishings, Inc., Portland, Oreg.
Filed Dec. 7, 1978, Ser. No. 967,425
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



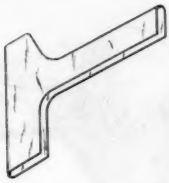
259,658
PIPEFITTING-INSULATION JACKET
Larry L. Bunting, 120 Englewood Dr., Asheboro, N.C. 27203
Filed Oct. 27, 1978, Ser. No. 955,401
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—137

259,659
ELECTRICAL IMPULSE APPARATUS
Hartley M. Sears, Costa Mesa, Calif., assignor to Schick Laboratories, Inc., Los Angeles, Calif.
Filed Jan. 31, 1979, Ser. No. 8,095
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—8

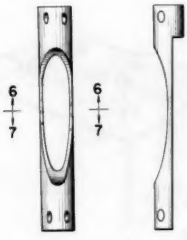


259,660
DENTAL THREADING TOOL
Alan J. Sosnay, 4 Washington Square Village, New York, N.Y. 10012
Filed Feb. 2, 1979, Ser. No. 8,972
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—11

259,661
ELECTRO-DESSICATOR HANDLE COVER
Patricia L. McGinnis, 7275 Columbus Dr., Anaheim Hills, Calif. 92807
Filed Feb. 14, 1979, Ser. No. 12,231
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—17

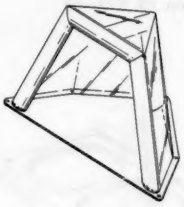


259,662
TOURNIQUET AND VEIN DELINEATOR
John C. C. Gandier, Maitland, Canada, assignor to American Home Products Corp., New York, N.Y.
Filed Aug. 14, 1978, Ser. No. 934,225
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—27

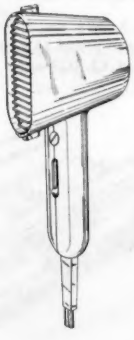


259,663
POOL COVER ROLLER
Graziano Sovernigo, 1418 Chartwell Dr., West Vancouver, British Columbia, Canada
Filed Aug. 10, 1979, Ser. No. 65,594
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—2

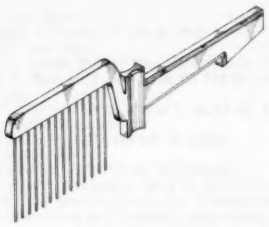
259,664
SHELTER
Sheila M. Curless, Harrogate, England, assignor to Gateley Enterprises, Harrogate, England
Filed Jul. 18, 1979, Ser. No. 58,585
Claims priority, application United Kingdom, Mar. 1, 1979, 988784/79
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—56



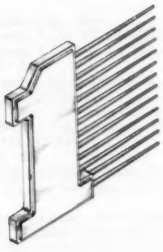
259,665
HAIR DRYER
Morison S. Cousins, New York, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed May 30, 1979, Ser. No. 43,883
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13



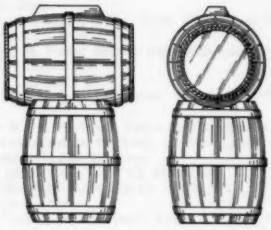
259,666
COMB
Loyal E. Williams, 20817 SW. Alexander, Aloha, Oreg. 97005
Filed Sep. 4, 1979, Ser. No. 71,936
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—22



259,667
COMB
Loyal E. Williams, 20817 SW. Alexander, Aloha, Oreg. 97005
Filed Sep. 4, 1979, Ser. No. 72,338
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—22



259,668
AQUARIUM
Humberto G. Vazquez, 505 S. Fifth St., Rockford, Ill. 61108
Filed Aug. 6, 1979, Ser. No. 63,843
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—10



259,669
PET FOOD DISH
Lloyd A. Peterson, Center City, Minn., assignor to Lloyd Plastics Company, Forest Lake, Minn.
Filed Jun. 2, 1980, Ser. No. 155,299
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.C. Sprayers Inc.: *See—*
Jones, Derek, 4,274,589, Cl. 239-167.000.

A.J.P. Scientific, Inc.: *See—*
Di Maggio, Joseph P., Jr.; Eng, Henry; Ball, Donald A.; and Walenciak, Kenneth J., 4,274,359, Cl. 118-56.000.

A-T-O, Inc.: *See—*
Painter, P. Eric; and Fisher, Curtis P., 4,274,187, Cl. 29-225.000.

AB Svenska Flaktfabriken: *See—*
Lindau, Leif A. V., 4,274,842, Cl. 55-72.000.

Abbott Laboratories: *See—*
Moore, Edwin G., 4,274,978, Cl. 252-408.000.
Tananier, John S.; and Martin, Jerry R., 4,275,193, Cl. 536-17.00R.

Abbott, Seth R., to Varian Associates, Inc. Fluorescent composition, a process for synthesizing the fluorescent composition, and methods of use of the fluorescent composition. 4,275,300, Cl. 250-304.000.

Abe, Ichiro, to Kirin Beer Kabushiki Kaisha. Device for automatically guiding and regulating travel of bottles or the like in a conveying system. 4,274,533, Cl. 198-450.000.

Abell, Irwin R., to Hartwig-Hartoglass, Inc. Double-wall greenhouse with flexible film walls. 4,274,234, Cl. 52-63.000.

Aberfoyle Services Pty. Ltd.: *See—*
Denholm, William T.; and Foo, Kevin A., 4,274,868, Cl. 75-21.000.

Abernethy, Lynn W.; and Watts, Elvert S., to AMP Incorporated. Modular jack. 4,274,691, Cl. 339-19.000.

Abo, Toshimi, to Nissan Motor Company, Limited. Air/fuel ratio control system equipped with a temperature sensor fail-safe system for an internal combustion engine. 4,274,381, Cl. 123-479.000.

Abrahamsson, Axel B.: *See—*
Bistrick, Eugene J.; and Abrahamsson, Axel B., 4,274,767, Cl. 407-18.000.

Abrahamsson, Tage, to Metzeler AB. Filter means. 4,274,960, Cl. 210-221.100.

Acker Drill Company, Inc.: *See—*
Multakh, Leonid, 4,274,769, Cl. 408-145.000.
Multakh, Leonid, 4,274,769, Cl. 408-145.000.

Adam, Donald E.: *See—*
Sikdar, Subhas K.; Adam, Donald E.; and Winterbottom, Howard, 4,275,038, Cl. 423-321.00S.

Adam, Kenneth L. Pig restraining device. 4,274,366, Cl. 119-98.000.

Adams, Jerry W., to Vapor Matic Corporation. Fuel vaporizer. 4,274,383, Cl. 123-523.000.

Adams, Milton R.: *See—*
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased, 4,274,254, Cl. 60-39.030.

Adams, Robert L., Jr.; Grant, Carl H.; and Stevens, Karl W., to International Business Machines Corporation. I/O Interrupt sequencing for real time and burst mode devices. 4,275,440, Cl. 364-200.000.

Adolfsson, Morgan, to ASEA Aktiebolag. Stabilized fiber optical measuring apparatus. 4,275,296, Cl. 250-227.000.

Adrian, Rudolf: *See—*
Thiele, Kurt; Ahmed, Quazi; Jahn, Ulrich; and Adrian, Rudolf, 4,275,068, Cl. 424-266.000.

Adsley, Ian: *See—*
Wykes, John S.; and Adsley, Ian, 4,275,298, Cl. 250-255.000.

Advanced Coating Technology, Inc.: *See—*
Love, Robert B., 4,274,936, Cl. 204-192.00R.

Agazzone, Umberto; and Ausiello, Francesco P., to Fiat Auto S.p.A.; and Ercole Marelli & C. S.p.A. Control and protection system for an installation for the combined production of electrical and thermal energy. 4,275,311, Cl. 290-2.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Duhamel, Lucette; and Plaquevent, Jean-Christophe, 4,275,217, Cl. 548-344.000.
Imbert, Christian; Levy, Yves; and Loulergue, Jean-Claude, 4,275,302, Cl. 250-330.000.

AGFA-Gevaert, A.G.: *See—*
Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,275,200, Cl. 544-137.000.
Thurm, Siegfried; and Bunge, Konrad, 4,274,732, Cl. 355-38.000.

AGFA-GEVAERT N.V.: *See—*
Burtin, Jean; and Geens, Maurits, 4,274,748, Cl. 356-431.000.
Van Beeck, Walter P.; Dictus, Alfons J.; Geens, Maurits; Simons, Roger J.; and Burtin, Jean, 4,274,747, Cl. 356-431.000.

Agrober Mezogazdasagi es Elelmiszeripari Tervezo, Beruhazasivallalat: *See—*
Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, 4,274,597, Cl. 239-542.000.

Ahlberg, Lloyd A.: *See—*
Tittmann, Bernhard R.; and Ahlberg, Lloyd A., 4,274,288, Cl. 73-602.000.

Ahmed, Quazi: *See—*
Thiele, Kurt; Ahmed, Quazi; Jahn, Ulrich; and Adrian, Rudolf, 4,275,068, Cl. 424-266.000.

Ahroni, Joseph M. Fused electric plug with snap-fitted body parts. 4,274,698, Cl. 339-147.00P.

Aisan Industry Co., Ltd.: *See—*
Morino, Toshiharu; and Okamura, Masayuki, 4,275,016, Cl. 261-44.00C.

Aish, Roslyn R., to National Research Development Corporation. Modelling arrangements. 4,275,449, Cl. 364-512.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Kodama, Hisashi, 4,274,370, Cl. 123-90.550.
Nakane, Mototaka, 4,274,524, Cl. 192-48.300.

Aisin-Warner K.K.: *See—*
Moroto, Shuzo; and Kobayashi, Kouji, 4,274,519, Cl. 192-3.280.

Ajimine, Akio: *See—*
Nakamura, Kenji; Ishikawa, Masao; and Ajimine, Akio, 4,274,358, Cl. 116-288.000.

Ajinomoto Company, Incorporated: *See—*
Tanaka, Takashi; Ono, Eiji; and Takinami, Koichi, 4,275,011, Cl. 260-410.700.
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, 4,275,157, Cl. 435-115.000.

Akasaka, Naomi: *See—*
Suzuki, Yoshihiro; Kinoshita, Hiroo; and Akasaka, Naomi, 4,274,981, Cl. 252-438.000.

Akasu, Hiroyuki: *See—*
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.

Akita, Yoshio: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Akiya, Takeo: *See—*
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.

Aktiebolaget Electrolux: *See—*
Crener, Bengt O., 4,274,847, Cl. 55-374.000.

Akzo N.V.: *See—*
Burley, Joseph W.; Hope, Peter; and Pritchard, Malcolm G., 4,274,999, Cl. 260-45.75S.

Akzona Incorporated: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,275,223, Cl. 560-115.000.

Albert, Ernst: *See—*
Blurock, Gunter; and Albert, Ernst, 4,274,297, Cl. 74-424.80R.

Albert, Robert J.: *See—*
Schmitt, Friedrich W., 4,274,452, Cl. 141-1.000.

Alcan Research and Development Limited: *See—*
Gnyra, Bohdan, 4,275,043, Cl. 423-130.000.
Lever, Gordon, 4,275,042, Cl. 423-130.000.
McNeely, Wray G.; Jack, Stanton E.; and O'Dette, John H., 4,274,894, Cl. 149-7.000.

Alexander Shand Services Limited: *See—*
Phillips, Raymond J., 4,274,796, Cl. 414-690.000.

Alexander, William C.; Kirk, Richard L.; and Thomsen, Kenneth A., to Goodyear Aerospace Corporation. Electrical signal interconnection coupler. 4,275,376, Cl. 340-52.00R.

Allbert, Barrie J.; French, Tom; Kemp, Ian; and Corner, Michael R., to Dunlop Limited. Pneumatic tire and wheel rim assembly. 4,274,465, Cl. 152-379.500.

Allen-Bradley Company: *See—*
Struger, Odo J.; and Branc, Joseph R., 4,275,307, Cl. 250-551.000.

Allied Chemical Corporation: *See—*
Bedell, John R.; Kavesh, Sheldon; Hemmat, Naim S.; Draizen, Seymour; and Smith, Robert W., 4,274,473, Cl. 164-423.000.
Friedland, David J.; Tewksbury, Floyd L.; and Robinson, Martin A., 4,275,037, Cl. 423-8.000.

Allis-Chalmers Corporation: *See—*
Slosiarek, Michael L.; and Zajichek, William J., 4,274,671, Cl. 296-190.000.

Alps Electric Co., Ltd.: *See—*
Sekiguchi, Mitsuo, 4,275,369, Cl. 333-209.000.
Wagatsuma, Tadashi; and Hiwatashi, Kenji, 4,275,279, Cl. 200-11.0DA.

Alsthom-Atlantique: *See—*
Huber, Andre; Muller, Alain; and Soffer, Jacques, 4,275,341, Cl. 318-376.000.

Alton Box Board Company: *See—*
Arnold, Clayton R., 4,274,580, Cl. 229-52.00B.

Ambrose, John: *See—*
Ettel, Victor A.; Devuyst, Eric A. P.; Babjak, Juraj; Ambrose, John; and Glaum, Gerald V., 4,274,930, Cl. 204-112.000.

American Beverage Control: *See—*
Shannon, Joseph W., 4,274,557, Cl. 222-136.000.

American Can Company: *See—*
Boardman, Alfred H., 4,274,351, Cl. 113-1.00F.

American Cyanamid Company: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,275,076, Cl. 424-309.000.
Goodman, Richard M.; and Panzer, Hans P., 4,274,945, Cl. 209-5.000.
Murdock, Keith C., 4,275,009, Cl. 260-380.000.
Murdock, Keith C., 4,275,010, Cl. 260-380.000.

American Home Products Corporation: *See—*
Wei, Peter H. L.; and Gregory, Francis J., 4,275,065, Cl. 424-256.000.

American Hospital Supply Corporation: *See—*
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,275,153, Cl. 435-13.000.

American Safety Flight Systems, Inc.: *See—*
Molzan, Albert R.; and Cleary, James D., 4,274,404, Cl. 128-204.250.

AMF Incorporated: *See—*
Grosser, Richard W.; and Long, Virgil L., Sr., 4,274,626, Cl. 272-109.000.
Weiss, Arnold A.; Christensen, David C.; and Sikkema, Bruce H., 4,274,289, Cl. 73-618.000.

AMFAC Foods, Inc.: *See—*
Brown, Roger A.; Clyde, William F.; and Galusha, Glenn D., 4,275,086, Cl. 426-518.000.

AMP Incorporated: *See—*
Abernethy, Lynn W.; and Watts, Elvert S., 4,274,691, Cl. 339-19.000.
Cobaugh, Robert F.; and Mendenhall, David W., 4,274,693, Cl. 339-65.000.
Long, William B.; and Zimmerman, John A., Jr., 4,274,696, Cl. 339-103.00R.

AMSTED Industries Incorporated: *See—*
Neumann, Otto W.; and Henkel, James A., 4,274,340, Cl. 105-197.0DB.

Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, to Commissariat a l'Energie Atomique. Method of extraction, trapping and storage of radioactive iodine contained in irradiated nuclear fuels. 4,275,045, Cl. 423-249.000.

Andersen Samplers Inc.: *See—*
Smith, Michael L., 4,274,846, Cl. 55-270.000.

Anderson, Olof V., to Auson Incorporated. Jewelry clutch. 4,274,180, Cl. 24-155.0BR.

Anderson, Robert F., to UOP Inc. Alkylation combined settler-soaker apparatus. 4,275,032, Cl. 422-110.000.

Anderson, Weston A.; Clark, Lloyd D.; and Beaver, William L., to Varian Associates, Inc. Sector scanner display and recording system for ultrasonic diagnosis. 4,274,422, Cl. 128-661.000.

Andersson, Morgan. Dispenser preferably driven by compressed-air for continuously dispensing a substance from a container, and in particular a viscous or paste-like material. 4,274,561, Cl. 222-334.000.

Andersson, Per-Erik: *See—*
Kroneld, Erik G.; and Andersson, Per-Erik, 4,274,911, Cl. 162-15.000.

Ando, Noboru: *See—*
Beppu, Teruhiko; and Ando, Noboru, 4,275,162, Cl. 435-196.000.

Ando, Tsunekazu, to Hochiki Corporation. Branching equipment for CATV systems. 4,275,365, Cl. 333-131.000.

Andres, Robert W., to Owens Service Corporation. Chiller control. 4,274,264, Cl. 62-148.000.

Andresen, Harvey E.; and Persohn, Thomas F., to Union Carbide Corporation. Acetylene recovery process and apparatus. 4,274,841, Cl. 55-40.000.

Angle, Rodney L., to RCA Corporation. Method for making a closed gate MOS transistor with self-aligned contacts. 4,274,193, Cl. 29-571.000.

Anson, Bruce S.: *See—*
Bolliger, Frederic E.; Woodhouse, Geoffrey D.; Mattson, George B.; Anson, Bruce S.; and Hatch, Robert A., 4,274,253, Cl. 60-39.030.

Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Ohtsuru, Masashi; and Yamazaki, Shiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. N-Benzoyl-N'-halogenoalkylidenehydrazine derivatives, process for preparing same, and agricultural and horticultural fungicide comprising such derivatives. 4,275,078, Cl. 424-324.000.

Apple, Martin A.; and Pappo, Raphael, to G. D. Searle & Co. Bis(4-demethoxydaunorubicin)dihydrazone derivatives and pharmacologically acceptable salts thereof. 4,275,192, Cl. 536-17.00A.

Applegate, Barry G.: *See—*
Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., 4,274,530, Cl. 198-347.000.

Appleton Papers Inc.: *See—*
Becker, William J.; Farber, Sheldon; and Hoover, Troy E., 4,275,206, Cl. 546-115.000.

Arai, Shoji: *See—*
Saito, Toshihiro; Arai, Shoji; and Tsutsumi, Yukihiro, 4,275,243, Cl. 568-496.000.

Arai, Yasue: *See—*
Kikuiri, Makoto; Nakashio, Yoshimi; Arai, Yasue; and Hidaka, Toshio, 4,274,913, Cl. 162-65.000.

Araki, Shigeru: *See—*
Mori, Kazuhiro; Misawa, Yoshihiko; Mayahara, Kiyoshi; and Araki, Shigeru, 4,274,529, Cl. 198-339.000.

Araki, Tamio: *See—*
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,274,462, Cl. 152-209.00R.

Arbed S.A.: *See—*
Metz, Paul, 4,274,863, Cl. 75-5.000.

Arena, Blaise J., to UOP Inc. Chitin- and chitosan-based immobilized metal catalysts. 4,274,980, Cl. 252-430.000.

Arias, Henry: *See—*
Ferris, Michael J.; and Arias, Henry, 4,274,629, Cl. 273-1.00R.

Armstrong Cork Company: *See—*
Rueggeberg, Werner, 4,275,301, Cl. 250-326.000.

Arnett, Robert D., Jr. Compact starter assembly. 4,274,292, Cl. 74-6.000.

Arnold, Clayton R., to Alton Box Board Company. Container carrier. 4,274,580, Cl. 229-52.00B.

Arrowhead Enterprises, Inc.: *See—*
Mudge, Philip H., 4,275,303, Cl. 250-342.000.

Arteche, Instrumentacion y Systemas Electronicos, S.A.: *See—*
Di Pietro Elizaran, Rodolfo, 4,275,445, Cl. 364-480.000.

Arvin Industries, Inc.: *See—*
Maxey, Alexander R., 4,275,424, Cl. 360-85.000.

Asahi-Dow Limited: *See—*
Shimizu, Hiroshi; Sato, Hiroshi; Miura, Nobuo; and Inada, Shuzo, 4,275,023, Cl. 264-50.000.
Watanabe, Seizaburo; and Matsuki, Yutaka, 4,275,168, Cl. 521-82.000.
Yamashita, Izumi; Fukuda, Kunio; and Tazaki, Kichiya, 4,274,998, Cl. 260-45.75B.

Asahi Glass Company, Ltd.: *See—*
Narisawa, Shigeyuki; Yanase, Hiroshi; and Kanno, Fukuo, 4,274,993, Cl. 260-37.00R.
Yamabe, Masaaki; Kumai, Seisaku; and Munekata, Seiji, 4,275,226, Cl. 560-183.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Matsuo, Hirohumi, 4,274,711, Cl. 350-464.000.

Asahi, Taro: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Asai, Sigeru, to Daicel Ltd. Optical fiber for transmission. 4,274,709, Cl. 350-96.340.

Asano, Noriyuki: *See—*
Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, 4,274,735, Cl. 356-1.000.

Asano, Toshihisa: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; Yoshida, Yuji; and Asano, Toshihisa, 4,274,889, Cl. 148-133.000.

ASEA Aktiebolag: *See—*
Adolfsson, Morgan, 4,275,296, Cl. 250-227.000.
Aviander, Stig; and Jacobsson, Curt, 4,275,356, Cl. 328-129.000.

Ashaway Line & Twine Mfg. Co.: *See—*
Crandall, Steven J., 4,275,117, Cl. 428-373.000.

Ashizaki, Shigeya; Muranishi, Hideo; and Sugahara, Koichi, to Matsushita Electronics Corporation. In-line electron gun. 4,275,332, Cl. 313-414.000.

Astleford, John J., Jr.: *See—*
Swoish, Raymond F.; and Astleford, John J., Jr., 4,275,431, Cl. 361-93.000.

Atlas Copco Aktiebolag: *See—*
Bergstrom, Claes-Gustav, 4,274,494, Cl. 173-2.000.

Audi Nsu Auto Union Aktiengesellschaft: *See—*
Lechler, Rolf; and Leitermann, Wulf, 4,274,815, Cl. 418-91.000.

Aufenvenne, Wilhelm: *See—*
Kaul, Gunther; Grunert, Wilfried; and Aufenvenne, Wilhelm, 4,274,780, Cl. 414-64.000.

Augustyn, Edward J., to NL Industries, Inc. Coupling agents for thermoplastic composites. 4,274,987, Cl. 260-23.00H.

Ausiello, Francesco P.: *See—*
Agazzone, Umberto; and Ausiello, Francesco P., 4,275,311, Cl. 290-2.000.

Auson Incorporated: *See—*
Anderson, Olof V., 4,274,180, Cl. 24-155.0BR.

Austin Hoy and Company Limited: *See—*
Herridge, Frederick, 4,274,678, Cl. 299-92.000.

Austin, Jared A., to Kimberly-Clark Corporation. Tampon containing blended superabsorbent material. 4,274,412, Cl. 128-285.000.

Australian National University, The: *See—*
Ringwood, Alfred E., 4,274,976, Cl. 252-301.10W.

Autoclave Engineers, Inc.: *See—*
Ruyak, Robert F., 4,274,444, Cl. 137-630.140.

Automation Systems, Inc.: *See—*
Bartlett, Peter G., 4,275,455, Cl. 364-900.000.

Aviander, Stig; and Jacobsson, Curt, to ASEA Aktiebolag. Digital time dependent relay circuitry. 4,275,356, Cl. 328-129.000.

Azuma, Shinsuke. Automotive hot water heater. 4,274,390, Cl. 126-19.500.

B. F. Goodrich Company, The: *See—*
Riew, Changkiu K., 4,274,994, Cl. 260-40.00R.
Sims, Gerald S., 4,274,526, Cl. 193-25.00B.

Babcock & Wilcox Company, The: *See—*
Girardi, Vincent J., 4,274,775, Cl. 409-251.000.

Babitzka, Rudolf: *See—*
Wilfert, Thomas; Babitzka, Rudolf; and Schlagmuller, Walter, 4,274,598, Cl. 239-585.000.

Babjak, Juraj: *See—*
Ettel, Victor A.; Devuyst, Eric A. P.; Babjak, Juraj; Ambrose, John; and Glaum, Gerald V., 4,274,930, Cl. 204-112.000.

Baby Relax: *See—*
Deloustal, Bernard, 4,274,674, Cl. 297-250.000.

Baker, John H. Apparatus and method for uniformly spreading a flowing stream of dry solids. 4,274,527, Cl. 193-32.000.

Ball, Donald A.: *See—*
Di Maggio, Joseph P., Jr.; Eng, Henry; Ball, Donald A.; and Walenciak, Kenneth J., 4,274,359, Cl. 118-56.000.

Balmer, Beat, to Kern & Co. AG. Method and apparatus for electrooptical distance measurement. 4,274,736, Cl. 356-5.000.

Balzarini, Giovanni; Buccino, Giovanni; Gnadeberg, Jules; Papeschi, Roberto; and Slavich, Giancarlo, to U.S. Philips Corporation. Method of and apparatus for testing of mass-produced articles. 4,275,451, Cl. 364-580.000.

Ban, Thomas E.; and Marlowe, William H., to Dravo Corporation. Method for improving bed firing characteristics and inhibiting coalescence of coal pellets. 4,274,836, Cl. 44-6.000.

Bando, Shigeru: *See—*
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, 4,274,424, Cl. 128-686.000.

Baney, Ronald H.; and Chi, Frank K., to Dow Corning Corporation. Pigment-free coatings with improved resistance to weathering. 4,275,118, Cl. 428-412.000.

Bangs, John R. Solar energy absorber. 4,274,395, Cl. 126-432.000.

Baniel, Avraham M.; Blumberg, Ruth; and Hajdu, Klara, to Imi (Tami) Institute for Research and Development. Recovery of acids from aqueous solutions. 4,275,234, Cl. 562-584.000.

Bannert, Johann; and Nagel, Guenter, to Siemens Aktiengesellschaft. Lockable contact socket for insertion into a plug connector. 4,274,701, Cl. 339-217.00S.

Bannon, Robert P., to Shell Oil Company. Fractionation process. 4,274,944, Cl. 208-352.000.

Banzai, Keiichiro: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Barclay, John H., to FMC Corporation. Method for transfer of crane from tower. 4,274,542, Cl. 212-270.000.

Bardenheuer, Friedrich; Konig, Horst; Junker, Alois; and Rath, Gero, to Mannesmann Aktiengesellschaft. Method for producing low-carbon steel from iron ores containing vanadium and/or titanium. 4,274,867, Cl. 75-13.000.

Barefoot, Carlton K. Method and apparatus for vulcanizing tires. 4,274,897, Cl. 156-96.000.

Bargain, Michel; and Lefort, Marcel, to Rhone-Poulenc Industries. Ethylenic silicon compounds and thermoplastic elastomers obtained therefrom. 4,275,184, Cl. 528-26.000.

Barillo, Joseph: *See—*
Tokosh, Richard; Barillo, Joseph; and Urban, Warren, 4,275,013, Cl. 260-504.00R.

Barker, Walter D. Granular material unloading vehicle with pressure-relief box. 4,274,790, Cl. 414-502.000.

Barley, Geoffrey W., to UOP Inc. Rotary vibration dampers. 4,274,516, Cl. 188-310.000.

Barr, John B., to Union Carbide Corporation. Spin size and thermosetting aid for pitch fibers. 4,275,051, Cl. 423-447.400.

Barth, Bruce P.; Johnson, Robert N.; and Mayer, Walter P., to Union Carbide Corporation. Frothable polyurethane composition and a cellular foam produced therefrom suitable for use in joints between wallboards. 4,275,172, Cl. 521-112.000.

Bartholic, David B.; and Chin, Don S., to Engelhard Minerals & Chemicals Corporation. Control of emissions in FCC regenerator flue gas. 4,274,942, Cl. 208-113.000.

Bartholomew, Victor L. Tracheotomy mask. 4,274,406, Cl. 128-206.210.

Bartkus, Edward A.; and Price, Robert L., to International Business Machines Corporation. Polyester stabilization process and product. 4,275,107, Cl. 428-220.000.

Bartlett, Peter G., to Automation Systems, Inc. Output interface card suitable for use with a programmable logic controller. 4,275,455, Cl. 364-900.000.

Bascou, Edith; and Ferlier, Jean-Pierre, to Filotex. Method of manufacturing a flexible electric cable which has a tinned stranded conductor on which an insulation is applied at a high temperature. 4,274,895, Cl. 156-53.000.

BASF Aktiengesellschaft: *See—*
Bjordahl, James, 4,275,427, Cl. 360-106.000.
Schoenafinger, Eduard; Motz, Herbert; Ohlinger, Manfred; Deigner, Paul; and Grau, Werner, 4,275,114, Cl. 428-328.000.

BASF Wyandotte Corporation: *See—*
Helfert, Herbert; and Davis, Pauls, 4,275,244, Cl. 568-624.000.
Login, Robert B., 4,275,176, Cl. 525-48.000.

Bassler, Wolfgang, to Mahle GmbH; and Institut fur Werkzeugmaschinen und Betriebstechnik Universitat Karlsruhe. Method of electroplating and honing light-alloy workpieces. 4,274,925, Cl. 204-26.000.

Bastian, Thomas W., to General Dynamics, Pomona Division. Jet tab control mechanism for thrust vector control. 4,274,610, Cl. 244-3.220.

Battelle Memorial Institute: *See—*
Bergmann, Erich; and Horlaville, Gerard, 4,275,126, Cl. 429-30.000.
Trojer, Felix; and Briggs, John, 4,275,102, Cl. 428-119.000.

Battersby, Edward. Method of forming a corrugated annulus. 4,274,275, Cl. 72-307.000.

Baughman, Richard C.; and Giometti, Michael A., to Eastman Kodak Company. Evaporator. 4,274,844, Cl. 55-196.000.

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Vulliens, Philippe, 4,274,317, Cl. 83-74.000.

Baus, Heinz G. Massage shower having a guide rail. 4,274,400, Cl. 128-53.000.

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Bohm, Siegfried; Klein, Alfons; and Wedemeyer, Karlfried, 4,275,241, Cl. 568-426.000.
Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, 4,274,910, Cl. 159-1.00C.
Hinz, Jurgen; and Brudermanns, Karola, 4,274,991, Cl. 260-30.80R.
Kolb, Fritz; Fehlisch, Silvan; Ziegert, Otto; Bender, Hans; and Schmitt, Manfred, 4,274,439, Cl. 137-601.000.
Naumann, Klaus; Behrenz, Wolfgang; Hammann, Ingeborg; Klauke, Erich; and Marhold, Albrecht, 4,275,250, Cl. 568-812.000.
Schulte, Klaus; and Peters, Robert, 4,275,033, Cl. 422-133.000.

Bayer, Herbert; Hoffmann, Gunther; and Schuon, Eberhard, to Wandel & Goltermann. Method of and system for measuring the transmission characteristics of four-terminal networks. 4,275,348, Cl. 324-57.00R.

Bayles, Richard A.; and Shuster, Philip, to Bayles, Richard A. Suspension file assembly. 4,274,687, Cl. 312-205.000.

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Brinson, Thomas F.; and Bayman, Jack A., 4,274,679, Cl. 301-37.0AT.

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Melton, Keith; and Mercier, Olivier, 4,274,872, Cl. 75-157.500.

BBC Brown Boveri & Company Limited: *See—*
Bernasconi, Felix R., 4,274,755, Cl. 403-337.000.
Bischofberger, Walter; and Zeller, Norbert, 4,275,392, Cl. 340-606.000.
Bukajlo, Jerzy, 4,274,260, Cl. 60-663.000.
Buxbaum, Charley; Gessinger, Gernot; and Strassler, Sigfrid, 4,275,123, Cl. 428-547.000.
Kalt, Jorg; and Kehlhofer, Rolf, 4,274,256, Cl. 60-39.18B.

Beatrice Foods Company: *See—*
Walter, Merrill H.; and Jacobs, Stanley, 4,274,350, Cl. 112-235.000.

Beaver, William L.: *See—*
Anderson, Weston A.; Clark, Lloyd D.; and Beaver, William L., 4,274,422, Cl. 128-661.000.

Becher, Heinz-Manfred; Sehring, Richard; Wirtz, Walter; and Prokic-Immel, Ricarda, to Celamerck GmbH & Co. KG. Insecticidal acyl urea derivatives. 4,275,077, Cl. 424-322.000.

Beck, Christian A.; Jurkowski, Walter J.; and Pegg, Charles E., to Pitney Bowes, Inc. Magnetic brush mixing augers. 4,274,362, Cl. 118-657.000.

Becker, Floyd W.; and Regimbal, Richard R., to Drill Systems, Inc. Multiple wall drill pipe. 4,274,663, Cl. 285-24.000.

Becker, Hans, to Linde Aktiengesellschaft. Rectification of natural gas. 4,274,850, Cl. 62-24.000.

Becker, William J.; Farber, Sheldon; and Hoover, Troy E., to Appleton Papers Inc. Lactone compounds containing an indolizine radical. 4,275,206, Cl. 546-115.000.

Beckmann, Franz: *See—*
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasch, Karl-Heinz, 4,274,924, Cl. 202-255.000.

Becton Dickinson and Company: *See—*
Williams, Joel; Dunn, Terry; and Stannett, Vivian, 4,274,932, Cl. 204-159.200.

Bedell, John R.; Kavesh, Sheldon; Hemmat, Naim S.; Draizen, Seymour; and Smith, Robert W., to Allied Chemical Corporation. Contour control for planar flow casting of metal ribbon. 4,274,473, Cl. 164-423.000.

Bednarski, Stanislaw, to Przedsiebiorstwo Wdrazania i Upowszechniania Postepu Technicznego i Organizacyjnego "Posteor". A modular heaping-type packing element. 4,275,019, Cl. 261-98.000.

Beecham Group Limited: *See—*
Hunt, Eric, 4,275,067, Cl. 424-263.000.

Beeckmans, Jan M.; and Inculet, Ion I. Electrostatic method and apparatus for sorting fluidized particulate material. 4,274,947, Cl. 209-12.000.

Beeghly, Bruce R., to Economy Engine Company, The. Integral spark plug coil for aircraft-type plug. 4,275,334, Cl. 315-57.000.

Beestrice, William R.: *See—*
Frey, William I.; and Beestrice, William R., 4,274,856, Cl. 65-24.000.

Behr, Friedrich: *See—*
Schulten, Rudolf; Behr, Friedrich; and Wenzl, Helmut, 4,274,938, Cl. 204-239.000.

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Naumann, Klaus; Behrenz, Wolfgang; Hammann, Ingeborg; Klauke, Erich; and Marhold, Albrecht, 4,275,250, Cl. 568-812.000.

Beitzel, Stuart W. Method and apparatus for treating water. 4,274,970, Cl. 210-748.000.

Belden Corporation: *See—*
Priest, James D., 4,274,607, Cl. 242-163.000.

Belfort, Gerard L.A.; and Richer, Daniel P. A., to Produits Chimiques Ugine Kuhlmann. Process for dyeing or printing synthetic fiber materials by means of disperse dyes, and colorant compositions utilizable for this purpose. 4,274,831, Cl. 8-532.000.

Bell Telephone Laboratories, Incorporated: *See—*
Boll, Harry J.; and Goldstein, Richard M., 4,275,313, Cl. 307-448.000.
Boll, Harry J.; and Lynes, Dennis J., 4,275,437, Cl. 363-60.000.
Buhl, Lawrence L., 4,275,144, Cl. 430-312.000.
Cassiday, Daniel R.; Keramidas, Vassilis G.; Roedel, Ronald J.; and Saul, Robert H., 4,275,404, Cl. 357-19.000.
El Hamamsy, Mahmoud A., 4,275,308, Cl. 250-551.000.
Fulton, Theodore A., 4,275,314, Cl. 307-462.000.
Michaelis, Paul C., 4,275,459, Cl. 365-8.000.
Peterson, William A., 4,275,436, Cl. 363-47.000.
Pleibel, William; and Stolen, Rogers H., 4,274,854, Cl. 65-2.000.
Rizzo, Joseph F., 4,275,276, Cl. 179-170.00D.
White, Lester L., 4,275,385, Cl. 340-312.000.

Bender, Hans: *See—*
Kolb, Fritz; Fehlisch, Silvan; Ziegert, Otto; Bender, Hans; and Schmitt, Manfred, 4,274,439, Cl. 137-601.000.

Benditalia S.p.A.: *See—*
Cadeddu, Leonardo, 4,274,521, Cl. 192-3.570.

Bendix Corporation, The: *See—*
Buck, Joseph M.; Gallusser, David O.; and Frear, David L., 4,274,702, Cl. 339-217.00R.
de Vulpillieres, Didier J., 4,274,380, Cl. 123-456.000.
DuCharme, Robert T.; and Herzog, Robert E., 4,274,514, Cl. 188-73.300.
Hendrickson, Richard T., 4,274,643, Cl. 280-6.100.
Kasselmann, John T., 4,274,513, Cl. 188-72.700.
Taig, Alistair G., 4,274,268, Cl. 64-7.000.

Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, to AGFA-Gevaert, A.G. Process for the production of oxazolinone-2-compounds. 4,275,200, Cl. 544-137.000.

Benscher, Hugo, to Benscher & Sons Pty. Limited. Inflatable bladder and valve. 4,274,633, Cl. 273-65.00C.

Benscher & Sons Pty. Limited: *See—*
Benscher, Hugo, 4,274,633, Cl. 273-65.00C.

Benteler-Werke AG: *See—*
Harmsen, Lothar; Bick, Klaus; Lachenmayer, Wilhelm; Vennmann, Friedhelm; and Zieschang, Jurgen, 4,275,258, Cl. 13-32.000.

Beppu, Teruhiko; and Ando, Noboru, to Chiyoda Chemical Engineering & Construction Co., Ltd.; and Beppu, Teruhiko. Process for the production of sphingomyelinase. 4,275,162, Cl. 435-196.000.

Berger, Mitchell H.; Matzner, Markus; and Gardner, Hugh C., to Union Carbide Corporation. Stress-crack resistant polyarylates. 4,275,188, Cl. 528-193.000.

Bergfeld, Manfred: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,275,223, Cl. 560-115.000.

Bergkvist, Lars A. Hydraulic control and drive device for rotary heat exchanger. 4,274,474, Cl. 165-7.000.

Bergmann, Erich; and Horlaville, Gerard, to Battelle Memorial Institute. Fuel cell electrode on solid electrolyte substrate. 4,275,126, Cl. 429-30.000.

Bergstrom, Claes-Gustav, to Atlas Copco Aktiebolag. Method and device for setting the direction and/or the inclination of an elongated rock drilling apparatus. 4,274,494, Cl. 173-2.000.

Bergwerksverband GmbH: *See—*
Janssen, Klaus; Peters, Werner; and Schilling, Hans-Dieter, 4,274,941, Cl. 208-8.00R.

Berisch, Volker, to ITT Industries, Inc. Brake force regulator for a motorcycle hydraulic brake system. 4,274,518, Cl. 188-344.000.

Berkley and Company, Inc.: *See—*
Oberg, Gary R.; and McMickle, Robert L., 4,274,201, Cl. 30-276.000.

Berluti, Nando. Tennis rackets. 4,274,634, Cl. 273-73.00L.

Bernasconi, Felix R., to BBC Brown Boveri & Company Limited. Rigid coupling, especially for turbogenerators. 4,274,755, Cl. 403-337.000.

Bernat, Georg; Nolting, Karl-Heinz; and John, Claus, to Friedrich Grohe Armaturenfabrik GmbH & Co. Mixer valve for sanitary engineering. 4,274,442, Cl. 137-625.170.

Bernhagen, Wolfgang: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,275,242, Cl. 568-463.000.

Bernhardt, Dieter; Dautzenberg, Norbert; Lummer, Richard; and Huber, Georg, to Mannesmann Aktiengesellschaft. Making iron powder. 4,274,864, Cl. 75-0.50R.

Bernstein, Seymour: *See—*
Conrow, Ransom B.; and Bernstein, Seymour, 4,275,076, Cl. 424-309.000.

Bernwall, Hans; Lundberg, Lars; and Seipel, Carl. Self-tailing winch. 4,274,606, Cl. 242-117.000.

Bethurum, Gary C., to Thomas & Betts Corporation. Method of making an environmental seal. 4,274,197, Cl. 29-861.000.

Bhushan, Bharat: *See—*
Gray, Stanley; and Bhushan, Bharat, 4,274,683, Cl. 308-9.000.

Bick, Klaus: *See—*
Harmsen, Lothar; Bick, Klaus; Lachenmayer, Wilhelm; Vennmann, Friedhelm; and Zieschang, Jurgen, 4,275,258, Cl. 13-32.000.

Biddlecom, William G.: *See—*
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., 4,275,224, Cl. 560-116.000.

Bigler, Allan J.: *See—*
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,275,209, Cl. 546-202.000.

Binder, George G., Jr.: *See—*
Maus, L. Donald; and Binder, George G., Jr., 4,274,283, Cl. 73-153.000.

Bio Research Center Company, Ltd.: *See—*
Taoka, Akira; and Uchida, Seiichi, 4,275,158, Cl. 435-136.000.

Bischofberger, Walter; and Zeller, Norbert, to BBC Brown Boveri & Company Limited. Method and apparatus for monitoring the gas volume of a hydropneumatic storage unit. 4,275,392, Cl. 340-606.000.

Bishop, Bernard F., to Illinois Tool Works Inc. Linear motion cable drive. 4,274,574, Cl. 226-170.000.

Bisits nee Zsilinszky, Vilma: *See—*
Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, 4,274,597, Cl. 239-542.000.

Bistrick, Eugene J.; and Abrahamsson, Axel B., to Lear Siegler, Inc. Helical toothed broach. 4,274,767, Cl. 407-18.000.

Bittner, Friedrich: *See—*
Hentschel, Klaus; and Bittner, Friedrich, 4,275,203, Cl. 544-194.000.

Bizerba-Werke Wilhelm Kraut KG: *See—*
Kuhnle, Ernst, 4,274,500, Cl. 177-25.000.

Bjaareklint, Ake B., to Svenska Utvecklingsaktiebolaget (SU) Swedish National Development Co. Electrode package and use thereof. 4,274,939, Cl. 204-257.000.

Bjordahl, James, to BASF Aktiengesellschaft. Transducer positioning apparatus. 4,275,427, Cl. 360-106.000.

Black, Donald E.: *See—*
Chae, Charles H.; Black, Donald E.; and Shah, Ramesh M., 4,274,744, Cl. 356-414.000.

Blaess, Gerhard, to Siemens Aktiengesellschaft. Method and apparatus for measurement of attenuation and distortion by a test object. 4,275,446, Cl. 364-487.000.

Blair, James E., to Sybron Corporation. Microbiological process for removing non-ionic surface active agents, detergents and the like from wastewater. 4,274,954, Cl. 210-611.000.

Block, Siegmar, to Thyssen Industrie AG. Excess pressure valve particularly for a fluid pressure operated telescopic supporting element employed in underground mining. 4,274,435, Cl. 137-508.000.

Blomgren, Rolf B. J. R.; and Edlund, Nils H. Noise shield. 4,274,506, Cl. 181-210.000.

Blondes, Leonard S.: *See—*
Clar, Milton, 4,274,906, Cl. 156-540.000.

Bloom, Bernard, to Midway Cap Company. Uniform cap. 4,274,160, Cl. 2-195.000.

Blumberg, Ruth: *See—*
Baniel, Avraham M.; Blumberg, Ruth; and Hajdu, Klara, 4,275,234, Cl. 562-584.000.

Blurock, Gunter; and Albert, Ernst, to Deutsche Star Kugelhalter GmbH. Spindle drive mechanism with circulating balls. 4,274,297, Cl. 74-424.80R.

Boardman, Alfred H., to American Can Company. Can end closure. 4,274,351, Cl. 113-1.00F.

Boden, Ogden W. Hat or cap with adjustable band. 4,274,157, Cl. 2-181.400.

Bodor, Nicholas S.; and Sloan, Kenneth B., to INTERx Research Corporation. Transient pro-drug forms of xanthine derivatives and their use as topical anti-inflammatory agents. 4,275,064, Cl. 424-253.000.

Boehme, Helen J., sole beneficiary: *See—*
Murphy, Clarence R.; Thackabeery, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., sole beneficiary, 4,274,917, Cl. 162-146.000.

Boehme, Robert E., deceased: *See—*
Murphy, Clarence R.; Thackabeery, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., sole beneficiary, 4,274,917, Cl. 162-146.000.

Boeing Company, The: *See—*
Miller, Glen E., 4,274,705, Cl. 350-96.150.

Bogeso, Klaus P.: *See—*
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,275,209, Cl. 546-202.000.

Boguth, Kurt, to Tuenkers GmbH. Suspension arrangement for suspending of vibrating elements and the like. 4,274,761, Cl. 405-232.000.

Bohm, Siegfried; Klein, Alfons; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of 3-phenoxy-benzaldehydes. 4,275,241, Cl. 568-426.000.

Boland, Roy. Monorail police patrol vehicle. 4,274,335, Cl. 104-93.000.

Boll, Harry J.; and Goldstein, Richard M., to Bell Telephone Laboratories, Incorporated. Current limiting output circuit with output feedback. 4,275,313, Cl. 307-448.000.

Boll, Harry J.; and Lynes, Dennis J., to Bell Telephone Laboratories, Incorporated. Semiconductor circuit for voltage conversion. 4,275,437, Cl. 363-60.000.

Bolliger, Frederic E.; Woodhouse, Geoffrey D.; Mattson, George B.; Anson, Bruce S.; and Hatch, Robert A., to Garrett Corporation, The. Control for turbine and recuperator inlet temperatures. 4,274,253, Cl. 60-39.030.

Bonnell, Leonard J.: *See—*
Johnson, Lanny L.; and Bonnell, Leonard J., 4,274,414, Cl. 128-305.000.

Bonumwerke Tigges & Winckel GmbH & Co. KG: *See*—
Petrick, Detlef, 4,274,202, Cl. 30-365.000.

Boomer, Merton E.: *See*—
Kopas, George A.; and Boomer, Merton E., 4,275,089, Cl. 426-601.000.

Borger, Waldemar: *See*—
Kappus, Wolfgang; and Borger, Waldemar, 4,275,129, Cl. 429-112.000.

Born, Raymond W.: *See*—
Miller, Lawrence J.; and Born, Raymond W., 4,274,296, Cl. 74-424.80R.

Borowitz, James L., to Bradley Manufacturing Company. Collapsible lampshade and releasable attachment means. 4,275,434, Cl. 362-352.000.

Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Polycrystalline tin oxide-silver chloride-cadmium chloride UV photosensitive film and method of use. 4,275,141, Cl. 430-270.000.

Bosse, Frank, to Windmoller & Holscher. Method for making sacks which are open at one end and comprise an outer sack of woven plastics tape fabric. 4,274,896, Cl. 156-88.000.

Botannet, Bernard: *See*—
Ratton, Serge; and Botannet, Bernard, 4,275,003, Cl. 260-205.000.

Bott, John A. Combination of luggage carrier and personal luggage. 4,274,568, Cl. 224-319.000.

Bott, John A. Luggage carrier assembly. 4,274,570, Cl. 224-324.000.

Bouillon, Claude; and Rosenbaum, Georges, to L'Oreal. Process for preparing mixed sulfonates of bis-(N-oxypyridyl-2-thio)aluminum. 4,275,199, Cl. 542-430.000.

Bouley, Jean-Claude A., to Bunker Ramo Corporation. Self-stripping electrical terminal. 4,274,198, Cl. 29-866.000.

Bourcier de Carbon, Christian. Shock absorber. 4,274,515, Cl. 188-269.000.

Boutet, Gilles. Toy building block. 4,274,221, Cl. 46-25.000.

Bowden, Carl G.: *See*—
Underwood, Johnny P.; and Bowden, Carl G., 4,275,442, Cl. 364-410.000.

Boyar-Schultz Corporation: *See*—
Verega, James, 4,274,231, Cl. 51-165.710.

Boyd, Ron V. Wine list display container apparatus. 4,274,216, Cl. 40-306.000.

Boyd, William J.; and King, Mary K., to Buckeye Cellulose Corporation, The. Stabilized rayon web and structures made therefrom. 4,275,105, Cl. 428-198.000.

Boydell, John M.: *See*—
Linton, Derek; and Boydell, John M., 4,274,242, Cl. 52-741.000.

Bradley Manufacturing Company: *See*—
Borowitz, James L., 4,275,434, Cl. 362-352.000.

Bradshaw, Bruce E., to Jamestown Lounge Company, a Division of Arbor Industries, Inc. Entertainment center cabinet. 4,274,685, Cl. 312-7.0TV.

Branc, Joseph R.: *See*—
Struger, Odo J.; and Branc, Joseph R., 4,275,307, Cl. 250-551.000.

Brandmayr, Ronald J.: *See*—
Vig, John R.; and Brandmayr, Ronald J., 4,274,907, Cl. 156-637.000.

Brandstrom, Karl-Peter: *See*—
Widigs, Sven H., 4,274,772, Cl. 408-241.00R.

Brandstrom, Lars-Gosta: *See*—
Widigs, Sven H., 4,274,772, Cl. 408-241.00R.

Branson, Charles D.; and Shopsky, Harvey J., to Robertshaw Controls Company. Condition responsive electrical switch construction and parts and methods therefor. 4,274,546, Cl. 220-4.00B.

Braun, Roland, to Raschig, G.m.b.H. Grid for carrying randomly dumped packing in a mass transfer column. 4,275,018, Cl. 261-94.000.

Braymer, George W., Jr.; and Diaz, Stephen H., to Upjohn Company, The. Vial and closure structure. 4,274,543, Cl. 215-6.000.

Brechin, Robert: *See*—
Pugh, William A. G.; Edmunds, Robert I.; Mansell, Peter B.; Brechin, Robert; and Langton, Hubert A., 4,274,224, Cl. 46-161.000.

Breslow, Jeffrey D.: *See*—
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,274,630, Cl. 273-1.00R.

Breuer, Hermann; Denzel, Theodore; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. Aminothiazolyl ureido sulfoxide cephalosporins. 4,275,062, Cl. 424-122.000.

Brico Engineering Limited: *See*—
Cadle, Terence M.; and Lane, Martyn S., 4,274,875, Cl. 75-232.000.

Bricot, Claude; and Lehureau, Jean Claude, to Thomson-Brandt. Recording device for optically recording information on a carrier with a light spot and a positional control of the spot. 4,275,275, Cl. 369-44.000.

Bridgestone Tire Co., Ltd.: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,274,462, Cl. 152-209.00R.

Briggs, John: *See*—
Trojer, Felix; and Briggs, John, 4,275,102, Cl. 428-119.000.

Brinson, Thomas F.; and Bayman, Jack A., to International Telephone and Telegraph Corporation. Wheel cover locking means. 4,274,679, Cl. 301-37.0AT.

Brother Kogyo Kabushiki Kaisha: *See*—
Kato, Masataka, 4,274,348, Cl. 112-158.00E.

Brown, David L. Non-oral communication device. 4,274,753, Cl. 400-87.000.

Brown, Patrick M.; and Jacob, Susan R., to Foote Mineral Company. Process for purification of lithium chloride. 4,274,834, Cl. 23-302.00R.

Brown, Roger A.; Clyde, William F.; and Galusha, Glenn D., to AMFAC Foods, Inc. Method of preparing potato segments. 4,275,086, Cl. 426-518.000.

Brudermanns, Karola: *See*—
Hinz, Jurgen; and Brudermanns, Karola, 4,274,991, Cl. 260-30.80R.

Brunner, Ronald H. M.: *See*—
Jensen, Billy M.; Brunner, Ronald H. M.; and Wong, Lang S., 4,274,331, Cl. 99-373.000.

Buccino, Giovanni: *See*—
Balzarini, Giovanni; Buccino, Giovanni; Gnadeberg, Jules; Papeschi, Roberto; and Slavich, Giancarlo, 4,275,451, Cl. 364-580.000.

Bucher-Guyer AG Maschinenfabrik: *See*—
Hauser, Hans-Ulrich, 4,274,248, Cl. 56-370.000.
Hauser, Hans-Ulrich, 4,274,249, Cl. 56-370.000.

Buck, Joseph M.; Gallusser, David O.; and Frear, David L., to Bendix Corporation, The. Antirotation means for wire wrap electrical connector assemblies. 4,274,702, Cl. 339-217.00R.

Buckeye Cellulose Corporation, The: *See*—
Boyd, William J.; and King, Mary K., 4,275,105, Cl. 428-198.000.

Budraitis, Tadas; and Seliga, Gerald W., to Productronix, Inc. Sensor for reciprocating press. 4,274,282, Cl. 73-862.640.

Buechler, Peter R.; Parker, Earl E.; and Mollohan, Kenneth L., to PPG Industries, Inc. Low temperature curing polyester resins and coating compositions. 4,274,992, Cl. 260-32.80R.

Buhl, Lawrence L., to Bell Telephone Laboratories, Incorporated. Method of fabricating electrodes with narrow gap therebetween. 4,275,144, Cl. 430-312.000.

Buholtz, William F.: *See*—
Sanders, John R.; Poythress, Richard L.; Shultz, Richard E.; Buholtz, William F.; and Fedder, Richard C., 4,274,361, Cl. 118-653.000.

Bukajlo, Jerzy, to BBC Brown Boveri & Company Limited. Method and apparatus for regulating a steam turbine. 4,274,260, Cl. 60-663.000.

Bundy, Gordon L., to Upjohn Company, The. Isoxazolyl derivatives of 9α,11α-epoxy imino-9,11,15-trideoxy-PGF-type compounds. 4,275,213, Cl. 548-240.000.

Bunge, Konrad: *See*—
Thurm, Siegfried; and Bunge, Konrad, 4,274,732, Cl. 355-38.000.

Bunker Ramo Corporation: *See*—
Bouley, Jean-Claude A., 4,274,198, Cl. 29-866.000.
Keglewitsch, Josef; and Vladic, Daniel P., 4,274,700, Cl. 339-192.00R.

Burke, Michael J.; and Collins, David W., to International Business Machines Corporation. Bifilar brushless DC motor. 4,275,339, Cl. 318-138.000.

Burkhardt, Friedrich; and Staiger, Hans, to Ex-Cell-O GmbH. Rotary index table. 4,274,773, Cl. 409-221.000.

Burkin, Alfred R.: *See*—
Ozensoy, Erol; and Burkin, Alfred R., 4,275,039, Cl. 423-54.000.

Burley, Joseph W.; Hope, Peter; and Pritchard, Malcolm G., to Akzo N.V. Compositions for stabilizing a vinyl or vinylidene halide polymer or chlorinated polyethylene, polymer compositions comprising such a stabilizer composition and shaped articles prepared therefrom. 4,274,999, Cl. 260-45.75S.

Burnett, James E.; and Robertson, John A., to Mead Corporation, The. Method and apparatus for sorting and deflecting drops in an ink jet drop recorder. 4,275,401, Cl. 346-75.000.

Burns, Michael E.: *See*—
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,274,975, Cl. 252-140.000.

Burri, Peter: *See*—
Petitpierre, Jean C.; and Burri, Peter, 4,275,005, Cl. 260-315.000.

Burroughs Corporation: *See*—
Chambors, John M., 4,275,293, Cl. 250-223.00R.
Sanders, John R.; Poythress, Richard L.; Shultz, Richard E.; Buholtz, William F.; and Fedder, Richard C., 4,274,361, Cl. 118-653.000.

Burtin, Jean; and Geens, Maurits, to AGFA-GEVAERT N.V. Method and device for inspecting a moving sheet material for streaklike defects. 4,274,748, Cl. 356-431.000.

Burtin, Jean: *See*—
Van Beeck, Walter P.; Dictus, Alfons J.; Geens, Maurits; Simons, Roger J.; and Burtin, Jean, 4,274,747, Cl. 356-431.000.

Busch, Helmut: *See*—
Kupper, Heinz; and Busch, Helmut, 4,274,375, Cl. 123-263.000.

Bush, George E. Dispensing of fluent materials. 4,274,409, Cl. 128-215.000.

Buus, Jorn L. M.: *See*—
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,275,209, Cl. 546-202.000.

Buxbaum, Charley; Gessinger, Gernot; and Strassler, Sigfrid, to BBC Brown Boveri & Company Limited. Hot-cathode material and production thereof. 4,275,123, Cl. 428-547.000.

C. G. R. Ultra Sonic: *See*—
Dory, Jacques, 4,274,421, Cl. 128-660.000.

Cadeddu, Leonardo, to Benditalia S.p.A. Synchronized hydropneumatic control of clutch and gearbox. 4,274,521, Cl. 192-3.570.

Cadle, Terence M.; and Lane, Martyn S., to Brico Engineering Limited. Powder metallurgy process and product. 4,274,875, Cl. 75-232.000.

Caldwell, James, to Dashglow Limited. Lighting fitting. 4,275,433, Cl. 362-22.000.

Cale, Roland E., to Schaefer Equipment Inc. Method of making railway car brake-rod jaw. 4,274,277, Cl. 72-356.000.

California Institute of Technology: *See—*
Rippel, Wally E.; and Edwards, Dean B., 4,275,130, Cl. 429-144.000.

Campagnie Francaise d'Etudes et de Construction Technip: *See—*
Garier, Christian; and Paradowski, Henri, 4,274,849, Cl. 62-9.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Pogorski, Louis A.; and Kuehn, Lorne A., 4,274,158, Cl. 2-2.10R.

Canadian General Electric Co., Ltd.: *See—*
Howard, John F., 4,275,373, Cl. 337-144.000.

Canadian Patents & Dev. Ltd.: *See—*
Sudar, Robert B.; Lewis, Edward L.; and Koppel, Albert W., 4,275,352, Cl. 324-449.000.

Canfield, Sheldon A.; Pierce, Richard H.; and Rapp, Kenneth L., to Owens-Corning Fiberglas Corporation. Electro-optical strand detector. 4,275,297, Cl. 250-239.000.

Canon Kabushiki Kaisha: *See—*
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, 4,275,306, Cl. 250-548.000.
Knechtel, Wilhelm, 4,275,134, Cl. 430-44.000.
Kohtani, Yutaka; and Komine, Yoshio, 4,274,718, Cl. 352-14.000.
Sato, Tadashi; Yoshimura, Shigeru; and Ichikawa, Kiyomichi, 4,274,624, Cl. 271-292.000.
Sugiura, Muneharu; and Minami, Setsuo, 4,274,733, Cl. 355-60.000.
Takahashi, Tohru; Sato, Tadashi; and Kishi, Hirotoshi, 4,275,423, Cl. 358-285.000.
Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, 4,274,735, Cl. 356-1.000.

Canron Corporation: *See—*
Lund, Raymond R., 4,274,334, Cl. 104-2.000.

Cardell, Max L.; and Holt, John R., to Fiber Industries, Inc. Method and apparatus for optically measuring crimp frequency. 4,274,746, Cl. 356-429.000.

Carden, Joseph A., Jr.; and McKinney, Ray, Jr., to Monsanto Company. Lactam terpolymer membranes. 4,274,965, Cl. 210-500.200.

Cargill, Incorporated: *See—*
Danick, Charles; and Panandiker, K. A. Pai, 4,275,189, Cl. 528-296.000.

Carl Still GmbH & Co. KG, Firma: *See—*
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasch, Karl-Heinz, 4,274,924, Cl. 202-255.000.

Carles, Jacques E.; and Durand, Michel, to Groupement Europeen de la Cellulose. Process for bleaching preoxidized paper pulp. 4,274,912, Cl. 162-41.000.

Carnaby, Garth A., to Wool Research Organization. Cut pile looper. 4,274,346, Cl. 112-79.00R.

Carroll, Frank E., to Carroll Research, Inc. Building structure. 4,274,239, Cl. 52-443.000.

Carroll Research, Inc.: *See—*
Carroll, Frank E., 4,274,239, Cl. 52-443.000.

Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., to Molins Limited. Packet handling apparatus. 4,274,530, Cl. 198-347.000.

Carter Equipment Co., Inc.: *See—*
Carter, William D.; and Mueller, Martin S., 4,274,731, Cl. 355-30.000.

Carter-Wallace Inc.: *See—*
Stiefel, Frank J., 4,275,198, Cl. 542-414.000.

Carter, William D.; and Mueller, Martin S., to Carter Equipment Co., Inc. Total immersion continuous loop apparatus and method. 4,274,731, Cl. 355-30.000.

Cartwright, Jeffery, to Sterling Winthrop Group Limited. Method of removing wallpaper. 4,274,884, Cl. 134-4.000.

Cascade Corporation: *See—*
Olson, John E., 4,274,794, Cl. 414-663.000.

Cassiday, Daniel R.; Keramidas, Vassilis G.; Roedel, Ronald J.; and Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Monolithic opto-isolator. 4,275,404, Cl. 357-19.000.

Castleberry, Larry Wayne: *See—*
Doerge, Gail W., 4,274,450, Cl. 140-82.000.

Cater, Miro S., to Emson Research Incorporated. Atomizing pump dispenser. 4,274,560, Cl. 222-321.000.

Caterpillar Tractor Co.: *See—*
Freese, Gary P., 4,274,493, Cl. 172-816.000.
Hulting, Thomas S., Jr., 4,274,898, Cl. 156-98.000.
Livesay, Richard E., 4,274,682, Cl. 305-11.000.
Sieving, Alfred W.; and Stanley, James M., 4,274,680, Cl. 303-6.00A.

Cather, Douglas A., Jr., to Garlock Inc. Shaft seal and method. 4,274,641, Cl. 277-153.000.

Catsburg, Wilhelmus M., to Schottel Nederland B.V. Propulsion system for a marine vessel. 4,274,827, Cl. 440-54.000.

Cavender, John L. Swivel locking device. 4,274,252, Cl. 59-86.000.

Cavil, David T.; and Krueger, William R., to Outboard Marine Corporation. Ignition system with active pulse discriminating means. 4,275,322, Cl. 310-111.000.

Cazaux, Joel, to Fives-Cail Babcock. Continuous casting installation. 4,274,472, Cl. 164-416.000.

CBS Inc.: *See—*
Finch, Robert A., 4,274,320, Cl. 84-1.010.

Celamerck GmbH & Co. KG: *See—*
Becher, Heinz-Manfred; Sehring, Richard; Wirtz, Walter; and Prokic-Immel, Ricarda, 4,275,077, Cl. 424-322.000.

Celanese Corporation: *See—*
Ikenaga, Yukio; and Matsuno, Osamu, 4,274,986, Cl. 260-22.0CQ.
Keith, Charles H.; and Tucker, Richard O., 4,274,914, Cl. 162-109.000.

Chae, Charles H.; Black, Donald E.; and Shah, Ramesh M., to Medico Electronic, Inc. Direct reading digital colorimeter. 4,274,744, Cl. 356-414.000.

Chamberlain Manufacturing Corporation: *See—*
Toenjes, Robert B., 4,274,227, Cl. 49-28.000.

Chambers, Gary R. Socket or cast brim. 4,274,166, Cl. 3-17.00R.

Chamblee, L. E.: *See—*
Henderson, Alan; and Chamblee, L. E., 4,274,861, Cl. 71-117.000.

Chambors, John M., to Burroughs Corporation. Jam detection and recovery system. 4,275,293, Cl. 250-223.00R.

Chan, Kingsley; and Russo, Neil, to Lightolier Incorporated. Attachment clamp for lighting fixture. 4,274,615, Cl. 248-343.000.

Chapel, Nimrod T. Apparatus for removing material. 4,274,676, Cl. 299-64.000.

Chapman, Kimberly L.: *See—*
Lake, Robert J.; and Chapman, Kimberly L., 4,274,749, Cl. 366-132.000.

Chappell, Christopher L., to Stablex A.G. Treatment of hazardous waste. 4,274,880, Cl. 106-90.000.

Charles, James A., to Metallurgical Processes Limited; and I.S.C. Smelting. Sulphide pellet materials. 4,274,878, Cl. 75-256.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Fulton, Donald E.; and Curtiss, William P., 4,275,343, Cl. 318-721.000.

Chaucer, Daniel. Fuse-plug adapter for electrical cord. 4,275,374, Cl. 337-197.000.

Chemetron Process Equipment, Inc.: *See—*
Trabue, Gordon C., 4,274,269, Cl. 64-11.00R.

Chevron Research Company: *See—*
Erdman, Timothy R., 4,275,006, Cl. 260-326.5SF.
Lilburn, Jennifer E., 4,274,837, Cl. 44-63.000.

Chi, Frank K.: *See—*
Baney, Ronald H.; and Chi, Frank K., 4,275,118, Cl. 428-412.000.

Chin, Don S.: *See—*
Bartholic, David B.; and Chin, Don S., 4,274,942, Cl. 208-113.000.

Chino, John J., to United States of America, Air Force. Electrically insulating structurally strong bushing assembly. 4,275,263, Cl. 174-152.00R.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, 4,274,985, Cl. 260-17.4ST.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Beppu, Teruhiko; and Ando, Noboru, 4,275,162, Cl. 435-196.000.

Cho, Chong I.; Zukowski, Edward C.; and Speros, Dimitri M., to General Electric Company. Electric discharge lamp having a cathode with cesium metal oxide. 4,275,330, Cl. 313-218.000.

Chow, Kuen: *See—*
Grinberg, Jan; Jacobson, Alexander D.; and Chow, Kuen, 4,275,410, Cl. 357-68.000.

Christensen, David C.: *See—*
Weiss, Arnold A.; Christensen, David C.; and Sikkema, Bruce H., 4,274,289, Cl. 73-618.000.

Christophliemk, Peter: *See—*
Stein, Werner; and Christophliemk, Peter, 4,275,048, Cl. 423-329.000.

Chu, Chin-Chiun, to Mobil Oil Corporation. Method for maintaining para-selectivity of modified zeolite catalyst. 4,274,982, Cl. 252-455.00Z.

Chu, Chin-Chiun; and Kaeding, Warren W., to Mobil Oil Corporation. Shape selective reactions with group VIIA metal modified zeolite catalysts. 4,275,256, Cl. 585-467.000.

Chu, Joseph Y. C.; and Tutihasi, Simpei, to Xerox Corporation. Dielectric overcoated photoresponsive imaging member and imaging method. 4,275,132, Cl. 430-31.000.

Chu, Joseph Y. C.; Schank, Richard L.; and Tutihasi, Simpei, to Xerox Corporation. Electrophotographic imaging processes utilizing adhesive generator overcoated photoreceptors. 4,275,133, Cl. 430-31.000.

Church, Larry L.; and Sun, Shan C., to Westinghouse Electric Corp. Protective relay apparatus. 4,275,429, Cl. 361-64.000.

Chvapil, Milos, to Medi-Coll, Inc. Intravaginal contraceptive and drug release device and method for making and using same. 4,274,410, Cl. 128-270.000.

Ciba-Geigy AG: *See—*
Moss, Brian F., 4,274,734, Cl. 355-74.000.

Ciba-Geigy Corporation: *See—*
Orban, Ivan; and Troxler, Eduard, 4,275,211, Cl. 546-242.000.
Petitpierre, Jean C.; and Burri, Peter, 4,275,005, Cl. 260-315.000.
Petree, Harris E.; and Nabors, James B., 4,275,238, Cl. 564-446.000.
Pfeifer, Josef; and Peter, Heinz, 4,275,239, Cl. 564-511.000.
Winter, Roland A. E.; and Dexter, Martin, 4,275,004, Cl. 260-206.000.
Zeyer, Josef; Hutter, Ralf; and Mayer, Peter, 4,274,955, Cl. 210-612.000.
Zurbuchen, Jacques, 4,274,829, Cl. 8-475.000.

Cielo, Paolo; and Westwood, William D., to Northern Telecom Limited. Thermally activated liquid ink printing. 4,275,290, Cl. 219-216.000.

Cioffi, Paul L.; Downs, William; Kish, William C.; and Newkirk, William E., to Electric Power Research Institute, Inc. Water cooled burner nozzle for solvent refined coal. 4,274,587, Cl. 239-132.300.

Claassen, George R.; and Mickelic, Raymond J., to PPG Industries, Inc. Molds for press bending glass sheets. 4,274,858, Cl. 65-273.000.

Clairaire Limited: *See*—
Simpson, Keith, 4,274,979, Cl. 252-422.000.

Clar, Milton, to Blondes, Leonard S., a part interest. Apparatus for automatically applying reinforcing tabs to loose-leaf sheets. 4,274,906, Cl. 156-540.000.

Clark, Lloyd D.: *See*—
Anderson, Weston A.; Clark, Lloyd D.; and Beaver, William L., 4,274,422, Cl. 128-661.000.

Clarke, John T.: *See*—
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,275,027, Cl. 264-118.000.

Clarke, Raymond, to Raychem Limited. Polymer compositions. 4,275,180, Cl. 525-173.000.

Clausen, Anthony R. Dispensing of fluent materials. 4,274,558, Cl. 222-214.000.

Cleary, James D.: *See*—
Molzan, Albert R.; and Cleary, James D., 4,274,404, Cl. 128-204.250.

Cleveland Clinic Foundation, The: *See*—
Shainoff, John R., 4,275,196, Cl. 536-115.000.

Clow Corporation: *See*—
Lake, Robert J.; and Chapman, Kimberly L., 4,274,749, Cl. 366-132.000.

Clyde, William F.: *See*—
Brown, Roger A.; Clyde, William F.; and Galusha, Glenn D., 4,275,086, Cl. 426-518.000.

Coal Industry (Patents) Limited: *See*—
Wykes, John S.; and Adsley, Ian, 4,275,298, Cl. 250-255.000.

Cobaugh, Robert F.; and Mendenhall, David W., to AMP Incorporated. Snap on card straightener. 4,274,693, Cl. 339-65.000.

Cocito, Giuseppe; and Michetti, Leonardo, to Cselt-Centro Studie Laboratori Telecommunication S.p.A. Devices for splicing optical fibres and cables. 4,274,708, Cl. 350-96.210.

Coder, James E., to W. R. Case Sons Cutlery Company. Lock open folding knife with side release. 4,274,200, Cl. 30-161.000.

Cohen, Howard. Power driven brush assembly. 4,274,173, Cl. 15-28.000.

Cohen, Melvin, to Holiday Industries, Inc. Plastic ornament and method of making same. 4,275,028, Cl. 264-126.000.

Cohen, Murray, to Grumman Aerospace Corporation. Double locking device. 4,274,754, Cl. 403-14.000.

Coin Acceptors, Inc.: *See*—
Walters, Robert N.; and Dietz, Kristen H., 4,274,528, Cl. 194-102.000.

Coleman, Michael H.; and Macrae, Alasdair R., to Lever Brothers Company. Fat process and composition. 4,275,081, Cl. 426-33.000.

Coles, Eric R.; and Walden, Rex K. Containers and support combinations. 4,274,540, Cl. 206-597.000.

Colin Robert Alty: *See*—
Harvey, Brian F., 4,274,218, Cl. 40-505.000.

Collier, Owen N.; and Hackett, Stephen J., to Johnson, Matthey & Co., Limited. Metal powders. 4,274,877, Cl. 75-252.000.

Collins, David W.: *See*—
Burke, Michael J.; and Collins, David W., 4,275,339, Cl. 318-138.000.

Collins, Joseph C., to Sterling Drug Inc. Aryl substituted diketones. 4,275,201, Cl. 544-171.000.

Colorcon, Inc.: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,274,830, Cl. 8-495.000.

Colt Industries Operating Corp.: *See*—
Tsiang, Chong L.; and Koch, Robert O., 4,274,376, Cl. 123-360.000.

Colten, Frank P.; Halik, Joseph J.; Ravallo, Robert J.; Hegadorn, Joseph L.; and Hynson, Richard B., to General Foods Corporation. Gasified candy enrobed with oleaginous material. 4,275,083, Cl. 426-96.000.

Combustion Engineering, Inc.: *See*—
Kokkinos, Angelos, 4,274,343, Cl. 110-263.000.
Musto, Richard L., 4,274,601, Cl. 241-186.200.

Comeau, Paul E., to Kenney Manufacturing Company. Drapery and support combination. 4,274,467, Cl. 160-84.00R.

Cominco Ltd.: *See*—
White, Arnold G.; Tarbet, James K.; Vanness, Dennis A.; Woods, Gordon J.; and Micklethwaite, William F. H., 4,274,389, Cl. 125-21.000.

Commissariat a l'Energie Atomique: *See*—
Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, 4,275,045, Cl. 423-249.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
Denholm, William T.; and Foo, Kevin A., 4,274,868, Cl. 75-21.000.

Compagnie Francaise des Petroles: *See*—
Thominet, Georges M., 4,274,664, Cl. 285-24.000.

Compagnie Generale des Etablissements Michelin: *See*—
Pommier, Jean, 4,274,464, Cl. 152-352.00R.

Compagnie Industrielle des Lasers: *See*—
Cornillault, Jean, 4,274,741, Cl. 356-336.000.

Compagnie Industrielle des Telecommunicators Cit-Alcatel: *See*—
Lemoussu, Michel, 4,275,465, Cl. 375-97.000.

Compagnie Industrielle Radioelectrique: *See*—
Favre, Nicolas, 4,275,299, Cl. 250-271.000.

Compton, Leslie E., to Occidental Research Corporation. Process for removing nitrogen from shale oil using pyrrole polymerization. 4,274,934, Cl. 204-162.00R.

Cona Company, Inc., The: *See*—
Sunshine, Richard B.; and Severen, Randall D., 4,274,591, Cl. 239-188.000.

Conair Corporation: *See*—
Nachtigal, Julius H.; and Zajac, David C., 4,275,055, Cl. 424-70.000.

Conchemco, Incorporated: *See*—
Golobay, Gary L., 4,274,300, Cl. 74-501.50R.

Congoleum Corporation: *See*—
Grose, Reginald E., 4,274,916, Cl. 162-145.000.

Conley, James L., to Conley and Kleppen Enterprises, Inc. Gas-shielded arc welding torch. 4,275,284, Cl. 219-74.000.

Conley and Kleppen Enterprises, Inc.: *See*—
Conley, James L., 4,275,284, Cl. 219-74.000.

Conoco, Inc.: *See*—
McClaflin, Gifford G., 4,274,943, Cl. 208-181.000.

Conover, Louis M. Pilot bearing puller. 4,274,189, Cl. 29-256.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Substituted naphthoic acids. 4,275,076, Cl. 424-309.000.

Consolidation Coal Company: *See*—
Faix, James E., 4,274,443, Cl. 137-625.640.

Constructions de Clichy: *See*—
Favrot, Paul, 4,274,229, Cl. 51-95.0WH.

Contant, Cornelis J., to U.S. Philips Corporation. Television camera. 4,275,412, Cl. 358-55.000.

Continental Group, Inc., The: *See*—
Westfall, James E., 4,274,544, Cl. 215-344.000.

Convery, F. Richard: *See*—
Malcom, Lawrence L.; and Convery, F. Richard, 4,274,163, Cl. 3-1.910.

Cook, Barrie J. A., to Sibex (Constructions) Limited. Sealing devices. 4,274,640, Cl. 277-9.000.

Cook, John P., to Electric Power Research Institute, Inc. Method and apparatus for sealing containers. 4,274,454, Cl. 141-1.000.

Coon, David B. Backhoe excavating apparatus. 4,274,797, Cl. 414-694.000.

Cooper Industries, Inc.: *See*—
Curtiss, George R., 4,274,304, Cl. 74-792.000.

Cooper, Jerry D., to Cosmetex, Inc. Integrated circuit storage catalog. 4,274,537, Cl. 206-329.000.

Cooper, Roydon B., to Pall Corporation. Pressure balanced three-way transfer valve. 4,274,445, Cl. 137-636.100.

Coors Container Company: *See*—
Huffman, Stanley S., 4,274,456, Cl. 141-157.000.
Shriver, Frank L., 4,275,097, Cl. 427-286.000.

Cope, Geoffrey W., to Dresser Industries, Inc. Radially steering railway truck assembly. 4,274,339, Cl. 105-168.000.

Coppin, Donald J.: *See*—
Mennino, Michael F., Jr.; and Coppin, Donald J., 4,275,272, Cl. 179-7.1TP.

Corbi, Ronald W. Method and apparatus for positioning a drag racing vehicle to a starting-line position. 4,275,292, Cl. 235-92.0DN.

Corbin, Raymond L.; and Reinhart, Robert F., to Johns-Manville Corporation. Asphalt shingle for simulating a tiled roof. 4,274,243, Cl. 52-748.000.

Cordes, Charles P. Double hi-hat support brackets. 4,274,322, Cl. 84-422.00R.

Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., to Procter & Gamble Company, The. Detergent composition. 4,274,975, Cl. 252-140.000.

Corner, Michael R.: *See*—
Allbert, Barrie J.; French, Tom; Kemp, Ian; and Corner, Michael R., 4,274,465, Cl. 152-379.500.

Cornillault, Jean, to Compagnie Industrielle des Lasers. Device for determining the granulometric composition of a mixture of particles by diffraction of light. 4,274,741, Cl. 356-336.000.

Corning Glass Works: *See*—
Borrelli, Nicholas F.; and Young, Peter L., 4,275,141, Cl. 430-270.000.

Cosmetex, Inc.: *See*—
Cooper, Jerry D., 4,274,537, Cl. 206-329.000.

Cottone, Andrew J.; and Saperstein, Zalman P., to Modine Manufacturing Company. Reaction bonding of ferrous metals. 4,274,483, Cl. 165-153.000.

Coulter Electronics, Inc.: *See*—
Proni, Oscar, 4,274,552, Cl. 222-61.000.

Cowgill, Charles F.: *See*—
Putnam, Paul S.; Cowgill, Charles F.; and Di Bella, Frank J., 4,274,778, Cl. 414-22.000.

CPG Products Corp.: *See*—
Pugh, William A. G.; Edmunds, Robert I.; Mansell, Peter B.; Brechin, Robert; and Langton, Hubert A., 4,274,224, Cl. 46-161.000.

Craig, Adrian W.: *See*—
Huey, Elbert P.; and Craig, Adrian W., 4,274,826, Cl. 433-144.000.

Crandall, Steven J., to Ashaway Line & Twine Mfg. Co. String construction produced by subjecting a fibrous strand composed of fibrous materials having differing melting points to heating conditions sufficient to melt some but not all of the fibrous materials. 4,275,117, Cl. 428-373.000.

Crane, Thomas A.: *See*—
Knoble, David W.; and Crane, Thomas A., 4,275,337, Cl. 315-289.000.

Credner, Hans-Heinrich: *See*—
Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,275,200, Cl. 544-137.000.

Creighton, Andrew M., to National Research Development Corporation. Pharmaceutical compositions. 4,275,063, Cl. 424-250.000.

Crener, Bengt O., to Aktiebolaget Electrolux. Vacuum cleaner dust bag. 4,274,847, Cl. 55-374.000.

Crounse, Nathan N.; and Schmidt, Paul J., to Sterling Drug Inc. Carbonless duplicating and marking systems utilizing indolyl-substituted furanone color formers. 4,275,121, Cl. 428-537.000.

Cselt-Centro Studie Laboratori Telecommunication S.p.A.: *See*—
Cocito, Giuseppe; and Michetti, Leonardo, 4,274,708, Cl. 350-96.210.

Cunningham, Hugh, to PPG Industries, Inc. Process for electrolyzing brine in a permionic membrane electrolytic cell. 4,274,928, Cl. 204-98.000.

Currier, Glorys A. Building layout for restaurant and artist work/exhibit area. 4,274,233, Cl. 52-33.000.

Curry, Paul F. Mine roof supporting system. 4,274,764, Cl. 405-291.000.

Curtiss, George R., to Cooper Industries, Inc. In-line reversing mechanism. 4,274,304, Cl. 74-792.000.

Curtiss, William P.: *See*—
Fulton, Donald E.; and Curtiss, William P., 4,275,343, Cl. 318-721.000.

Customized Components Co.: *See*—
Warren, Earney R., 4,274,656, Cl. 280-757.000.

Cut Rate Plastic Hangers, Inc.: *See*—
Warmath, John, 4,274,564, Cl. 223-93.000.

Cutler, Robert A.: *See*—
Stanciu, Virgil V.; Cutler, Robert A.; and Kasper, Kenneth R., 4,274,823, Cl. 425-145.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Kagami, Akiyasu; and Tanigami, Yoshinori, 4,275,333, Cl. 313-495.000.

Daicel Ltd.: *See*—
Asai, Sigeru, 4,274,709, Cl. 350-96.340.

Daidoto Kushuko Kabushikaisha: *See*—
Hiratake, Susumu, 4,275,287, Cl. 219-121.0PR.

Dale, Eugene M.; and Malstrom, Jerry A., to Energy Harvest, Inc. Anaerobic digester for organic waste. 4,274,838, Cl. 48-111.000.

D'Alfonso, Nunzio: *See*—
Neitz, Alfred; and D'Alfonso, Nunzio, 4,274,371, Cl. 123-179.00H.

D'Amato, Michael J.: *See*—
Hoffman, Ernest G.; and D'Amato, Michael J., 4,274,692, Cl. 339-60.00M.

D'Ambrosio, Joseph J. Adjustable book cover. 4,274,659, Cl. 281-34.000.

Danchuk, William: *See*—
Reed, Michael A.; Hatcher, Ian; Reed, Kingstone L. H.; and Danchuk, William, 4,274,262, Cl. 62-3.000.

Dani, Mahesh J., to Dunmore Corporation. Metalized polyester resin laminate. 4,275,099, Cl. 428-31.000.

Danick, Charles; and Panandiker, K. A. Pai, to Cargill, Incorporated. Neopentyl glycol, terephthalate, dicarboxy acid, trimellitate thermosetting resin. 4,275,189, Cl. 528-296.000.

Dappen, Glen M.: *See*—
Wu, Tai-Wing; and Dappen, Glen M., 4,274,832, Cl. 23-230.00R.

Dashglow Limited: *See*—
Caldwell, James, 4,275,433, Cl. 362-22.000.

Datta, Pabitra, to RCA Corporation. Video disc processing. 4,275,100, Cl. 369-286.000.

Dautzenberg, Norbert: *See*—
Bernhardt, Dieter; Dautzenberg, Norbert; Lummer, Richard; and Huber, Georg, 4,274,864, Cl. 75-0.50R.

Davenport, John M.: *See*—
Fridrich, Elmer G.; and Davenport, John M., 4,275,329, Cl. 313-217.000.

Davenport, Lawrence J., to Younger Manufacturing Company. Ophthalmic progressive power lens and method of making same. 4,274,717, Cl. 351-169.000.

Davida, George I.; and Kam, John B., to Wisconsin Alumni Research Foundation. Complete substitution permutation enciphering and deciphering circuit. 4,275,265, Cl. 178-22.090.

Davidson, Harry T.: *See*—
Parker, William H.; and Davidson, Harry T., 4,275,398, Cl. 343-112.00R.

Davidson, Roderick I., to Fibun B.V. Security system and strip or strand incorporating fibre-optic wave-guide means therefor. 4,275,294, Cl. 250-227.000.

Davis, Brian R., to NL Industries, Inc. Process for extracting titanium values from titaniferous bearing material. 4,275,040, Cl. 423-82.000.

Davis, Paul W., Jr., to TRW Inc. Oil-filled submergible electric pump motor with improved stator winding insulation. 4,275,319, Cl. 310-43.000.

Davis, Pauls: *See*—
Helfert, Herbert; and Davis, Pauls, 4,275,244, Cl. 568-624.000.

Dawson, Daniel J.: *See*—
Gless, Richard D., Jr.; Dawson, Daniel J.; and Wingard, Robert E., 4,275,002, Cl. 260-144.000.

Dawson, Edward S., to Surf-Jet Corporation. Power operated surfboard. 4,274,357, Cl. 114-270.000.

Dayal, Vijay S.: *See*—
Joy, Michael; Moon, Richard E.; Quashem, Abul; Lo, Alex; and Dayal, Vijay S., 4,274,162, Cl. 3-1.300.

Dayco Corporation: *See*—
Patterson, Gene L., 4,274,278, Cl. 73-7.000.

de la Plaza, Alejandro, to University of California, The Regents of the. Speech detector for use in an adaptive hybrid circuit. 4,275,270, Cl. 179-1.0SC.

De, Sun-Tong: *See*—
Wang, David T.; and De, Sun-Tong, 4,274,272, Cl. 70-214.000.

Decker, Dennis Gary: *See*—
Doerge, Gail W., 4,274,450, Cl. 140-82.000.

Defibrator Aktiebolag: *See*—
Johansson, Johan G. I., 4,274,602, Cl. 241-298.000.

de Groot, Willem J.; Penner, Horst; Schmied, Irene; and Weber, Peter, to Dynamit Nobel AG; and Geberit AG. Pyrotechnical welding sleeve connector for the joining of molded components, especially pipes, of a thermoplastic synthetic resin. 4,274,662, Cl. 285-21.000.

Degussa Aktiengesellschaft: *See*—
Simon, Franz; and Schmidt, Manfred, 4,274,926, Cl. 204-39.000.
Simon, Franz; Zilske, Wolfgang; and Schmidt, Manfred, 4,274,927, Cl. 204-39.000.
Voigt, Carl; and Kleinschmit, Peter, 4,275,049, Cl. 423-352.000.

Deigner, Paul: *See*—
Schoenafinger, Eduard; Motz, Herbert; Ohlinger, Manfred; Deigner, Paul; and Grau, Werner, 4,275,114, Cl. 428-328.000.

De Jonge, Jelis: *See*—
Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,275,091, Cl. 427-53.100.

Del Norte Technology, Inc.: *See*—
Parker, William H.; and Davidson, Harry T., 4,275,398, Cl. 343-112.00R.

Delalande S.A.: *See*—
Hubert-Brierre, Yves A., 4,275,216, Cl. 548-342.000.

Delgado, Patricio E.; and Holmes, Barry A., to P.I. Specialist Engineers Limited. Vertical axis wind turbines. 4,274,809, Cl. 416-117.000.

Deloustal, Bernard, to Baby Relax. Safety seat for transporting a child in a motor vehicle. 4,274,674, Cl. 297-250.000.

Delpy, David T., to National Research Development Corporation. Instruments for use in the measurement of gases in body fluids. 4,274,417, Cl. 128-632.000.

Delta Materials Research Limited: *See*—
Sims, Raymond B., 4,275,370, Cl. 335-37.000.

Delwing, Dieter: *See*—
Uher, Edmond, 4,274,620, Cl. 254-351.000.

Demange, Michel; and Septier, Louis, to Societe Francaise d'Electrometallurgie-Sofrem. Method of obtaining manganese alloys with a medium carbon content. 4,274,871, Cl. 75-134.00M.

de Nagybaczon, Erno N., to International Hona NV. Dry transfer system. 4,275,104, Cl. 428-195.000.

Denholm, William T.; and Foo, Kevin A., to Commonwealth Scientific and Industrial Research Organization; and Aberfoyle Services Pty. Ltd. Recovery of tin from ores or other materials. 4,274,868, Cl. 75-21.000.

Denison, Don E., to Lingl Corporation. Method for manufacturing concrete brick in block like articles and forming shipping packs therefrom. 4,275,029, Cl. 264-152.000.

Denver Splint Company, The: *See*—
Shippert, Ronald D., 4,274,402, Cl. 128-89.00R.

Denzel, Theodore: *See*—
Breuer, Hermann; Denzel, Theodore; and Treuner, Uwe D., 4,275,062, Cl. 424-122.000.

Depowski, Norma M. Patient transfer apparatus. 4,274,168, Cl. 5-81.00B.

de Rancourt de Mimerand, Yvan; and Goullet, Jean, to Hotchkiss-Brandt Sogeme H.B.S. Clip for carrying articles engaging, disengaging and overlapping system for such a clip. 4,274,782, Cl. 414-104.000.

de Ruffi de Ponteves, Dominique C. N. E. M.: *See*—
Ferrier, Noel H. L.; and de Ruffi de Ponteves, Dominique C. N. E. M., 4,274,609, Cl. 244-3.140.

DeSoto, Inc.: *See*—
Mylonakis, Stamatios G.; and Tortorello, Anthony J., 4,275,229, Cl. 562-459.000.

Detroy, Robert W.: *See*—
Wicklow, Donald T.; and Detroy, Robert W., 4,275,167, Cl. 435-277.000.

Deutsche Gold und Silber Scheideanstalt vormals Roessler: *See*—
Hentschel, Klaus; and Bittner, Friedrich, 4,275,203, Cl. 544-194.000.
Lumbeck, Gerd; and Ferch, Horst, 4,274,883, Cl. 106-308.00Q.
Stein, Werner; and Christophliemk, Peter, 4,275,048, Cl. 423-329.000.

Deutsche Star Kugelhalter GmbH: *See*—
Blurock, Gunter; and Albert, Ernst, 4,274,297, Cl. 74-424.80R.

de Vulpillieres, Didier J., to Bendix Corporation, The. Check valve central metering injection system. 4,274,380, Cl. 123-456.000.

Devuyst, Eric A. P.: *See*—
Ettel, Victor A.; Devuyst, Eric A. P.; Babjak, Juraj; Ambrose, John; and Glaum, Gerald V., 4,274,930, Cl. 204-112.000.

Dewey, Anthony G.; and Sincerbox, Glenn T., to International Business Machines Corporation. Interactive projection display system. 4,275,395, Cl. 340-706.000.

Dexter, Martin: *See*—
Winter, Roland A. E.; and Dexter, Martin, 4,275,004, Cl. 260-206.000.

Diamond Shamrock Corporation: *See*—
Novak, Donald S., 4,274,929, Cl. 704-98.000.

Diaz, Stephen H.: *See*—
Braymer, George W., Jr.; and Diaz, Stephen H., 4,274,543, Cl. 215-6.000.

Di Bella, Frank J.: *See*—
Putnam, Paul S.; Cowgill, Charles F.; and Di Bella, Frank J., 4,274,778, Cl. 414-22.000.

Dickover, William: *See—*
Passafiume, Anthony; Lamber, Clarence F.; and Dickover, William, 4,274,318, Cl. 83-177.000.

Dictus, Alfons J.: *See—*
Van Beeck, Walter P.; Dictus, Alfons J.; Geens, Maurits; Simons, Roger J.; and Burtin, Jean, 4,274,747, Cl. 356-431.000.

Diesel Equipment Limited: *See—*
Martin, John C.; and McKee, William C., 4,274,789, Cl. 414-501.000.

Diesel Kiki Company, Ltd.: *See—*
Kobayashi, Shigeru; Kanda, Takemi; and Shibuya, Tsunenori, 4,274,816, Cl. 418-93.000.

Dieterich, Charles B., to RCA Corporation. PCM Detector. 4,275,416, Cl. 358-147.000.

Dietmar, Peter, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Bumper for motor vehicles. 4,274,667, Cl. 293-102.000.

Dietrich, Herbert: *See—*
McAllister, Lawrence E.; and Dietrich, Herbert, 4,275,170, Cl. 521-103.000.

Dietrichs, Hans-Hermann: *See—*
Puls, Jurgen; Sinner, Michael; and Dietrichs, Hans-Hermann, 4,275,159, Cl. 435-175.000.

Dietz, Ernest: *See—*
Dodge, Donald M.; and Dietz, Ernest, 4,274,697, Cl. 339-103.00R.

Dietz, Kristen H.: *See—*
Walters, Robert N.; and Dietz, Kristen H., 4,274,528, Cl. 194-102.000.

DiGregorio, David; McCarthy, Daniel; Mounteer, Keith J.; and Thompson, Charles D., to Envirotech Corporation. Gas-liquid dissolving tank. 4,275,020, Cl. 261-111.000.

Dijkstra, Rinse: *See—*
Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,275,091, Cl. 427-53.100.

Di Maggio, Joseph P., Jr.; Eng, Henry; Ball, Donald A.; and Walenciak, Kenneth J., to A.J.P. Scientific, Inc. Biological slide staining apparatus. 4,274,359, Cl. 118-56.000.

Di Pietro Elizaran, Rodolfo, to Arteche, Instrumentacion y Systemas Electronicos, S.A. Delayed action electrical protection device, depending on an adjusted magnitude. 4,275,445, Cl. 364-480.000.

Disko, Harry: *See—*
Morrison, Howard J.; and Disko, Harry, 4,274,223, Cl. 46-95.000.

Diversey Corporation, The: *See—*
Stanton, James H.; and Garvin, Donald F., 4,274,973, Cl. 252-34.700.

Diving Unlimited International, Inc.: *See—*
Long, Richard W.; and Stinton, Robert T., 4,274,759, Cl. 405-186.000.

Dobbie, Graham J.: *See—*
Langham, Maurice E., 4,275,074, Cl. 424-280.000.

Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, to Agrober Mezogazdasagi es Elelmiszeripari Tervezo, Beruhazasivallalat. Watering head. 4,274,597, Cl. 239-542.000.

Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Krick, Gerd; Konang, Peter; Sigdeil, Jan-Erik; and Heilmann, Klaus, 4,274,964, Cl. 210-321.300.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Dietmar, Peter, 4,274,667, Cl. 293-102.000.
Pitzmann, Gregor, 4,274,670, Cl. 296-1.00S.

Dodge, Donald M.; and Dietz, Ernest, to Pacific Electricord Company. Ground pin blade and electrical connector plug. 4,274,697, Cl. 339-103.00R.

Doerge, Gail W., to Sproles, Michael Andrew; Decker, Dennis Gary; Houston, Rex; and Castleberry, Larry Wayne, part interest to each. Universal clip and structure for making same. 4,274,450, Cl. 140-82.000.

Dombroski, Robert M.: *See—*
Thomson, Ronald E.; and Dombroski, Robert M., 4,274,509, Cl. 184-15.00B.

Donaldson, Peter A., to Imperial Chemical Industries Limited. Purification of dicarboxylic acids. 4,275,230, Cl. 562-486.000.

Dorn, Franz, to Hoffmann-La Roche Inc. Fungicidal N-alkynylanilides. 4,275,079, Cl. 424-324.000.

Dorn, Harry M. Trouble light. 4,275,435, Cl. 362-368.000.

Dorr-Oliver Incorporated: *See—*
Fitch, Elliot B., 4,274,958, Cl. 210-208.000.

Dory, Jacques, to C. G. R. Ultra Sonic. Echo sound apparatus including an oscillating mirror for use in medical diagnosis. 4,274,421, Cl. 128-660.000.

Dotson, Robert S., Jr. Fluid operated ophthalmic irrigation and aspiration device. 4,274,411, Cl. 128-276.000.

Double Diamond Company: *See—*
Webber, Jack C., 4,274,484, Cl. 166-188.000.

Dougan, Ernest V., to Standard Brands Incorporated. Frozen puff pastry and edible insert combination and process. 4,275,082, Cl. 426-92.000.

Dow Chemical Company, The: *See—*
Harris, Monty E., 4,274,489, Cl. 166-315.000.
Hinze, Kenneth J., 4,275,173, Cl. 521-117.000.
Manfroy, Willy; and Klimpel, Richard R., 4,274,599, Cl. 241-16.000.
Orvik, Jon A., 4,275,212, Cl. 546-290.000.
Priddy, Duane B., 4,275,182, Cl. 526-109.000.

Dow Chemical Company Limited: *See—*
Ison, Robin R., 4,275,215, Cl. 548-305.000.

Dow Corning Corporation: *See—*
Baney, Ronald H.; and Chi, Frank K., 4,275,118, Cl. 428-412.000.

Downs, William: *See—*
Cioffi, Paul L.; Downs, William; Kish, William C.; and Newkirk, William E., 4,274,587, Cl. 239-132.300.

Doyel, John S. Toy electric sewing machine. 4,274,349, Cl. 112-169.000.

Draizen, Seymour: *See—*
Bedell, John R.; Kavesh, Sheldon; Hemmat, Naim S.; Draizen, Seymour; and Smith, Robert W., 4,274,473, Cl. 164-423.000.

Drake, Charles A.; and Williams, Ralph P., to Philips Petroleum Company. Hydrogenated polynitrile mixture useful as an epoxy hardener. 4,275,237, Cl. 564-306.000.

Drake, Louis V., Jr. Manually steerable skateboard. 4,274,647, Cl. 280-87.04A.

Dravo Corporation: *See—*
Ban, Thomas E.; and Marlowe, William H., 4,274,836, Cl. 44-6.000.

Dresser Industries, Inc.: *See—*
Cope, Geoffrey W., 4,274,339, Cl. 105-168.000.
Penny, Samuel L., 4,274,498, Cl. 175-228.000.

Drill Systems, Inc.: *See—*
Becker, Floyd W.; and Regimbal, Richard R., 4,274,663, Cl. 285-24.000.

Driscoll, John S.: *See—*
Marquez, Victor E.; Liu, Paul S.; and Driscoll, John S., 4,275,057, Cl. 424-180.000.

DuCharme, Robert T.; and Herzog, Robert E., to Bendix Corporation, The. Pin slider disc brake. 4,274,514, Cl. 188-73.300.

Dudgeon, Charles D., to General Electric Company. Latent heat-curable iodonium/copper salt-catalyzed epoxy resin compositions. 4,275,190, Cl. 528-361.000.

Dueweke, Gilbert R.; and Krobock, John J. Log splitters. 4,274,458, Cl. 144-193.00D.

Duhamel, Lucette; and Plaquevent, Jean-Christophe, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the preparation of optically active α-amino acids and their derivatives. 4,275,217, Cl. 548-344.000.

Duhayon, Jacques: *See—*
Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, 4,275,045, Cl. 423-249.000.

Dumont, Hubert H. Wheelchair. 4,274,651, Cl. 280-242.0WC.

Duncan, Fred A. Magnetohydrodynamic method and apparatus for converting solar radiation to electrical energy. 4,275,318, Cl. 310-11.000.

Dungs, Horst: *See—*
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasch, Karl-Heinz, 4,274,924, Cl. 202-255.000.

Dunlop Limited: *See—*
Allbert, Barrie J.; French, Tom; Kemp, Ian; and Corner, Michael R., 4,274,465, Cl. 152-379.500.
French, Tom; Mitchell, William E.; Kenney, Michael J.; and Holmes, Thomas, 4,274,466, Cl. 152-381.300.

Dunmore Corporation: *See—*
Dani, Mahesh J., 4,275,099, Cl. 428-31.000.

Dunn, Terry: *See—*
Williams, Joel; Dunn, Terry; and Stannett, Vivian, 4,274,932, Cl. 204-159.200.

Dunn, William M.; and Hodge, Malcolm H., to TRW Inc. Apparatus for severing an optical fiber. 4,274,572, Cl. 225-96.500.

Du Pont de Nemours, E. I., and Company: *See—*
Hoh, George L., 4,275,181, Cl. 525-189.000.
Keim, Kenneth J., 4,274,699, Cl. 339-176.0MP.
Krespan, Carl G., 4,275,225, Cl. 560-174.000.
Moberg, William K., 4,275,073, Cl. 424-273.00P.
Neiss, Melvin A., 4,275,140, Cl. 430-254.000.
Rector, James L.; and Weber, Paul R., 4,274,751, Cl. 366-310.000.
Rothman, Leonard A., 4,275,208, Cl. 546-189.000.

Durand, Michel: *See—*
Carles, Jacques E.; and Durand, Michel, 4,274,912, Cl. 162-41.000.

Duro-Test Corporation: *See—*
Walsh, Peter, 4,275,327, Cl. 313-111.000.

Duttlinger, Jean-Christian, to Wolber. Method of manufacturing a tubular tire for cycles. 4,274,899, Cl. 156-123.00R.

Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Finsterwalder, Klemens, 4,274,356, Cl. 114-265.000.

Dynamit Nobel AG: *See—*
de Groot, Willem J.; Penner, Horst; Schmied, Irene; and Weber, Peter, 4,274,662, Cl. 285-21.000.

Dynapol: *See—*
Gless, Richard D., Jr.; Dawson, Daniel J.; and Wingard, Robert E., 4,275,002, Cl. 260-144.000.

Dyonics, Inc.: *See—*
Johnson, Lanny L.; and Bonnell, Leonard J., 4,274,414, Cl. 128-305.000.

E. R. Squibb & Sons, Inc.: *See—*
Breuer, Hermann; Denzel, Theodore; and Treuner, Uwe D., 4,275,062, Cl. 424-122.000.

Earl, Gary W.; and Hickman, Howard M., to Sherex Chemical Company, Inc. Tertiary di-(β-hydroxy organo) amine oxides and their preparation. 4,275,236, Cl. 564-298.000.

Eastman, George Y., to Thermacore, Inc. Sintered grooved wicks. 4,274,479, Cl. 165-104.260.

Eastman Kodak Company: *See—*
Baughman, Richard C.; and Giometti, Michael A., 4,274,844, Cl. 55-196.000.

Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,151, Cl. 435-11.000.
Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,152, Cl. 435-11.000.
Masurekar, Prakash S., 4,275,164, Cl. 435-227.000.
McCollough, George T.; Esders, Theodore W.; and Lynn, Shirley Y., 4,275,166, Cl. 435-227.000.
Wu, Tai-Wing; and Dappen, Glen M., 4,274,832, Cl. 23-230.00R.

Eaton Corporation: *See*—
Koch, William E., Jr.; and Klimowicz, Michael A., 4,274,257, Cl. 60-431.000.

Ebauches S.A.: *See*—
Schaad, Jean, 4,275,462, Cl. 368-88.000.

Ebert, Emil. Ratchet wrench handle. 4,274,311, Cl. 81-63.000.

Economy Engine Company, The: *See*—
Beeghly, Bruce R., 4,275,334, Cl. 315-57.000.

Eddy, William R., to Phillips Petroleum Company. Clamping apparatus for use with a multi-station packaging machine or the like. 4,274,534, Cl. 198-479.000.

Edlund, Nils H.: *See*—
Blomgren, Rolf B. J. R.; and Edlund, Nils H., 4,274,506, Cl. 181-210.000.

Edmunds, Robert I.: *See*—
Pugh, William A. G.; Edmunds, Robert I.; Mansell, Peter B.; Brechin, Robert; and Langton, Hubert A., 4,274,224, Cl. 46-161.000.

Edwards, Dean B.: *See*—
Rippel, Wally E.; and Edwards, Dean B., 4,275,130, Cl. 429-144.000.

Eggert, Joseph J.: *See*—
McVicker, Gary B.; and Eggert, Joseph J., 4,275,046, Cl. 423-258.000.

Egner, Ronald J., to Textron, Inc. Panel fastener joint. 4,274,460, Cl. 411-83.000.

Ehrsam, Kurt: *See*—
Menningen, Roland; Ehrsam, Kurt; Oberhansli, Jurg; and Grunig, Kurt, 4,275,295, Cl. 250-227.000.

Eibl, Volker: *See*—
Lutz, Dieter; Krause, Peter; Terveen, Axel; and Eibl, Volker, 4,274,425, Cl. 128-719.000.

Eidenschink, Herrn H.; and Eidenschink, Marianne. Optical process and apparatus for determining particle size of colloidal solution. 4,274,740, Cl. 356-336.000.

Eidenschink, Marianne: *See*—
Eidenschink, Herrn H.; and Eidenschink, Marianne, 4,274,740, Cl. 356-336.000.

Eineichner, Donald E.; and Tullis, Barclay J., to FMC Corporation. Chain measuring and conveyor control system. 4,274,783, Cl. 414-134.000.

Eisai Co., Ltd.: *See*—
Takahashi, Toshio; and Tagaya, Ryosaku, 4,274,745, Cl. 356-427.000.

Eistert, Theodor: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen. Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.

Ekstrom, Lincoln: *See*—
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,275,101, Cl. 369-286.000.

Elber, Wolf, to United States of America, National Aeronautics and Space Administration. Method of making a partial interlaminar separation composite system. 4,274,901, Cl. 156-242.000.

Electric Power Research Institute, Inc.: *See*—
Baumann, Kai J.; and Ying, Sui-Chun, 4,275,320, Cl. 310-52.000.
Cioffi, Paul L.; Downs, William; Kish, William C.; and Newkirk, William E., 4,274,587, Cl. 239-132.300.
Cook, John P., 4,274,454, Cl. 141-1.000.
Wootton, Roy E., 4,275,260, Cl. 174-17.0GF.

Electronic Modules Corporation: *See*—
Houck, David J., 4,275,264, Cl. 178-18.000.

Eley, Edgar R., to Westinghouse Electric Corp. Protected electrical inductive apparatus. 4,275,372, Cl. 337-4.000.

El Hamamsy, Mahmoud A., to Bell Telephone Laboratories, Incorporated. Optically toggled device. 4,275,308, Cl. 250-551.000.

Eli Lilly and Company: *See*—
Paget, Charles J., Jr., 4,275,210, Cl. 546-222.000.

Elvidge, John H. K.; and Watkinson, Charles J. Jet pump. 4,274,812, Cl. 417-179.000.

EMI Limited: *See*—
Ryan, John L., 4,275,444, Cl. 364-414.000.

Emson Research Incorporated: *See*—
Cater, Miro S., 4,274,560, Cl. 222-321.000.

Endo, Takaya: *See*—
Kojima, Tamotsu; Fujiwhara, Mitsuto; Endo, Takaya; and Iijima, Akio, 4,275,148, Cl. 430-558.000.

Energy Harvest, Inc.: *See*—
Dale, Eugene M.; and Malstrom, Jerry A., 4,274,838, Cl. 48-111.000.

Energy and Minerals Research, Co.: *See*—
Tarpley, William B., Jr., 4,274,491, Cl. 169-46.000.

Enfield, Derek B.: *See*—
Illakowicz, Jan; and Enfield, Derek B., 4,274,621, Cl. 266-61.000.

Eng, Henry: *See*—
Di Maggio, Joseph P., Jr.; Eng, Henry; Ball, Donald A.; and Walenciak, Kenneth J., 4,274,359, Cl. 118-56.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Bartholic, David B.; and Chin, Don S., 4,274,942, Cl. 208-113.000.

Engle, Gary L., to Litton Industrial Products, Inc. Scan converter. 4,275,415, Cl. 358-140.000.

English Card Clothing Company Limited, The: *See*—
Grimshaw, Keith; and Taylor, Roy, 4,274,177, Cl. 19-99.000.

English, Tim G. Audio visual monitoring system for announcing a message upon detection of a monitored condition. 4,275,274, Cl. 369-22.000.

Environmental Research Institute of Michigan: *See*—
Klooster, Alex, Jr., 4,275,454, Cl. 364-861.000.

Envirotech Corporation: *See*—
DiGregorio, David; McCarthy, Daniel; Mounteer, Keith J.; and Thompson, Charles D., 4,275,020, Cl. 261-111.000.

Enzian, Clayton T., Jr. Lifeboat. 4,274,171, Cl. 9-4.00R.

Ercole Marelli & C. S.p.A.: *See*—
Agazzone, Umberto; and Ausiello, Francesco P., 4,275,311, Cl. 290-2.000.

Erdman, Timothy R., to Chevron Research Company. Process of preparing dispersant lubricating oil additives. 4,275,006, Cl. 260-326.5SF.

Eriksson, Hans E. K.: *See*—
Svensson, Claes G. S.; Eriksson, Hans E. K.; and Lundgren, Rolf B., 4,274,786, Cl. 414-218.000.

Ertel, Ulrike, to G.R.P. Gesellschaft fur Rationelle Psychologie oHG. Toothbrush. 4,274,174, Cl. 15-143.00R.

Ervin, James K.; and Salamon, Nicholas L., to Textron, Inc. Method and apparatus for gapping woven slide fastener stringer having elements mounted on longitudinal member in edge of tape. 4,274,191, Cl. 29-408.000.

Esashika, Tadashi, to Sony Corporation. Aperture correction signal processing circuit. 4,275,417, Cl. 358-162.000.

Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., to Eastman Kodak Company. Hydrolysis of protein-bound cholesterol esters. 4,275,151, Cl. 435-11.000.

Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., to Eastman Kodak Company. Hydrolysis of protein-bound cholesterol esters. 4,275,152, Cl. 435-11.000.

Esders, Theodore W.: *See*—
McCollough, George T.; Esders, Theodore W.; and Lynn, Shirley Y., 4,275,166, Cl. 435-227.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,274,188, Cl. 29-240.000.

Esposito, Roberto: *See*—
Messori, Vittorio; Francese, Renato; and Esposito, Roberto, 4,275,204, Cl. 544-204.000.

Etablissement Supervis: *See*—
Mettler, Karl, 4,274,276, Cl. 72-354.000.

Ettel, Victor A.; Devuyst, Eric A. P.; Babjak, Juraj; Ambrose, John; and Glaum, Gerald V., to International Nickel Company, Inc., The. Process for recovering cobalt electrolytically. 4,274,930, Cl. 204-112.000.

Evans, Edward N., to Park Mobile, Inc. Detection of object in path of moving gate. 4,274,226, Cl. 49-25.000.

Evers, Heinz; and Goedecke, Hartmut, to Frank'sche Eisenwerke AG. Safety spraying device. 4,274,553, Cl. 222-76.000.

Evers, Robert S.: *See*—
Kuyper, Herman S.; Evers, Robert S.; and Regal, John, 4,274,469, Cl. 160-107.000.

Ex-Cell-O GmbH: *See*—
Burkhardt, Friedrich; and Staiger, Hans, 4,274,773, Cl. 409-221.000.

Exxon Production Research Company: *See*—
Maus, L. Donald; and Binder, George G., Jr., 4,274,283, Cl. 73-153.000.

Exxon Research & Engineering Co.: *See*—
Hoffman, Paul R., 4,275,426, Cl. 360-99.000.
McVicker, Gary B.; and Eggert, Joseph J., 4,275,046, Cl. 423-258.000.

Fairchild Camera & Instrument Corp.: *See*—
Varshney, Ramesh C., 4,275,387, Cl. 340-347.0AD.

Faix, James E., to Consolidation Coal Company. Directional control valve. 4,274,443, Cl. 137-625.640.

Fapiano, Donald J.; and Smith, Michael A., to General Electric Company. Temperature control in hot strip mill. 4,274,273, Cl. 72-13.000.

Farber, Sheldon: *See*—
Becker, William J.; Farber, Sheldon; and Hoover, Troy E., 4,275,206, Cl. 546-115.000.

Farmer, Felta C., Jr.; and Knight, Donald P., to RCA Corporation. Precision cathode current regulator. 4,275,347, Cl. 323-312.000.

Farmos Group, Ltd.: *See*—
Karjalainen, Arto; and Kurkela, Kauko, 4,275,072, Cl. 424-273.00R.

Favre, Nicolas, to Compagnie Industrielle Radioelectrique. Method and apparatus for detecting a fluorescent area on a sheet of paper. 4,275,299, Cl. 250-271.000.

Favrot, Paul, to Constructions de Clichy. Frames of grinding machines. 4,274,229, Cl. 51-95.0WH.

Fedder, Richard C.: *See*—
Sanders, John R.; Poythress, Richard L.; Shultz, Richard E.; Buholtz, William F.; and Fedder, Richard C., 4,274,361, Cl. 118-653.000.

Federal Paper Board Company, Inc.: *See*—
Kulig, Francis V., 4,274,579, Cl. 229-28.00R.

Fee, Graham M., to True Temper Corporation. Separate insulator pad between a clip and a railroad rail. 4,274,582, Cl. 238-349.000.

Fehlisch, Silvan: *See*—
Kolb, Fritz; Fehlisch, Silvan; Ziegert, Otto; Bender, Hans; and Schmitt, Manfred, 4,274,439, Cl. 137-601.000.

Feldstein, George, to Shimelman, Myer B. Medicament dispensing device. 4,274,550, Cl. 221-71.000.

Feller, Murray F., to Wilgood Corporation. Rotation sensor. 4,275,291, Cl. 235-92.0FL.

Fenner, Robert M.; and Franz, Edward P. Exercise apparatus. 4,274,627, Cl. 272-117.000.

Fenyvesi, Eva: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, 4,274,985, Cl. 260-17.4ST.

Ferag AG: *See*—
Reist, Walter; and Honegger, Werner, 4,274,623, Cl. 271-217.000.

Ferch, Horst: *See*—
Lumbeck, Gerd; and Ferch, Horst, 4,274,883, Cl. 106-308.00Q.

Ferguson, Arthur; and Spector, George. Porto auto oil easy drain. 4,274,645, Cl. 280-47.260.

Ferlier, Jean-Pierre: *See*—
Bascou, Edith; and Ferlier, Jean-Pierre, 4,274,895, Cl. 156-53.000.

Ferranti Limited: *See*—
Leather, Russell A., 4,274,694, Cl. 339-74.00R.

Ferrier, Noel H. L.; and de Ruffi de Ponteves, Dominique C. N. E. M., to Societe d'Etudes et de Realisations Electroniques; and Societe de Fabrication d'Instruments de Mesure (SFIM). Target and missile angle tracking method and system for guiding missiles on to targets. 4,274,609, Cl. 244-3.140.

Ferrieu, Gilbert M. M., to U.S. Philips Corporation. Subscriber line interface circuit for a telephone line. 4,275,277, Cl. 179-170.0NC.

Ferris, Michael J.; and Arias, Henry, to Marvin Glass & Associates. Combative game apparatus. 4,274,629, Cl. 273-1.00R.

Festag, Werner; Muller, Hans-Ueli; and Stanek, Oldrich, to Swiss Aluminium Ltd. Closure system for containers, in particular for non-returnable containers of semi-rigid material, made out of at least two dish-shaped parts which are joined together. 4,274,541, Cl. 206-613.000.

Fiat Auto S.p.A.: *See*—
Agazzone, Umberto; and Ausiello, Francesco P., 4,275,311, Cl. 290-2.000.

Fiber Associates: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,275,195, Cl. 536-101.000.

Fiber Industries, Inc.: *See*—
Cardell, Max L.; and Holt, John R., 4,274,746, Cl. 356-429.000.

Fiber Materials, Inc.: *See*—
McAllister, Lawrence E.; and Dietrich, Herbert, 4,275,170, Cl. 521-103.000.

Fibun B.V.: *See*—
Davidson, Roderick I., 4,275,294, Cl. 250-227.000.

Fichtel & Sachs AG: *See*—
Raab, Harald; and Weissenberger, Helmuth, 4,274,525, Cl. 192-106.200.

Fike, Louis T. Lock system for tire curing apparatus. 4,274,820, Cl. 425-29.000.

Fillie, Jean, to Trefimetaux. End piece for high voltage cables. 4,275,261, Cl. 174-73.00R.

Filotex: *See*—
Bascou, Edith; and Ferlier, Jean-Pierre, 4,274,895, Cl. 156-53.000.

Finch, Robert A., to CBS Inc. One key chording system for electronic keyboard instrument. 4,274,320, Cl. 84-1.010.

Findl, Eugene; and Kurtz, Robert J., to Howmedica Inc. Apparatus for sensing electrical potentials. 4,274,937, Cl. 204-195.00R.

Finetex, Inc.: *See*—
Scala, Thomas L., Jr., 4,275,222, Cl. 560-103.000.

Fink, Hans-Ferdi: *See*—
Koerner, Gotz; and Fink, Hans-Ferdi, 4,274,977, Cl. 252-358.000.

Finkelstein, Oscar P. Dispenser for web-like material. 4,274,573, Cl. 225-106.000.

Finn, Kenneth F. Toggle wrench. 4,274,312, Cl. 81-356.000.

Finsterwalder, Klemens, to Dyckerhoff & Widmann Aktiengesellschaft. Semi-submersible floating structure. 4,274,356, Cl. 114-265.000.

Firth, Bruce E., to UOP Inc. Preparation of 2,4,6-triisopropylphenol. 4,275,248, Cl. 568-781.000.

Firth, Bruce E., to UOP Inc. Preparation of 2,4-Di-t-alkylphenol. 4,275,249, Cl. 568-789.000.

Firth, William C., Jr., to Union Camp Corporation. Method for stimulating growth in foliage plants. 4,274,860, Cl. 71-24.000.

Fischer, Jochen: *See*—
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,274,345, Cl. 112-51.000.

Fischer, Wolf E., to Semperit AG. Connection coupling connectable under pressure. 4,274,441, Cl. 137-614.050.

Fischer, Wolfgang; and Wissel, Brigitte, to Merck Patent Gesellschaft mit beschrankter Haftung. Agent and process for carrying out colorimetric or photometric determinations. 4,275,031, Cl. 422-57.000.

Fisher, Curtis P.: *See*—
Painter, P. Eric; and Fisher, Curtis P., 4,274,187, Cl. 29-225.000.

Fisher, David R.: *See*—
Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., 4,274,225, Cl. 46-227.000.

Fisher, Leslie G., to GKN Transmissions Limited. Shaft and universal joint member assembly. 4,275,122, Cl. 428-542.000.

Fishter, Robert E.; and Manty, Brian A., to United Technologies Corporation. Cyanide free solution and process for removing gold-nickel braze. 4,274,908, Cl. 156-637.000.

Fisli, Tibor, to Xerox Corporation. High-efficiency symmetrical scanning optics. 4,274,703, Cl. 350-6.800.

Fisons Limited: *See*—
Geering, Quinton A., 4,275,060, Cl. 424-218.000.
Harris, John F., 4,275,247, Cl. 568-767.000.

Fitch, Elliot B., to Dorr-Oliver Incorporated. Flocculant distributor means for feedwell. 4,274,958, Cl. 210-208.000.

Fitzpatrick, Donald C.: *See*—
Frye, Kenneth G.; and Fitzpatrick, Donald C., 4,274,319, Cl. 83-430.000.

Fives-Cail Babcock: *See*—
Cazaux, Joel, 4,274,472, Cl. 164-416.000.

Flair, Henry J., to Illinois Tool Works Inc. Differential checking head. 4,274,207, Cl. 33-179.50R.

Flanders, Ralph W. Exercise and game apparatus. 4,274,639, Cl. 273-402.000.

Flasch, Karl-Heinz: *See*—
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasch, Karl-Heinz, 4,274,924, Cl. 202-255.000.

Flick, Carl, to Westinghouse Electric Corp. Dynamoelectric machine having shielded retaining rings. 4,275,324, Cl. 310-270.000.

Flora, Lawrence; and Francis, Marion D., to Procter & Gamble Company, The. Salicylate anti-inflammatory composition. 4,275,059, Cl. 424-204.000.

Flower, Ralph F. J. Method of manufacturing brush seals. 4,274,575, Cl. 228-160.000.

FMC Corporation: *See*—
Barclay, John H., 4,274,542, Cl. 212-270.000.
Eineichner, Donald E.; and Tullis, Barclay J., 4,274,783, Cl. 414-134.000.
Hall, Richard E.; and Guiliano, Basil A., 4,275,202, Cl. 544-192.000.

Focht, Harry, to Paul Troester Maschinenfabrik. Apparatus for heating rubber products with UHF energy. 4,275,283, Cl. 219-10.55F.

Foo, Kevin A.: *See*—
Denholm, William T.; and Foo, Kevin A., 4,274,868, Cl. 75-21.000.

Foote Mineral Company: *See*—
Brown, Patrick M.; and Jacob, Susan R., 4,274,834, Cl. 23-302.00R.

Ford, George A.: *See*—
Willis, Clyde A.; and Ford, George A., 4,274,497, Cl. 175-100.000.

Ford Motor Company: *See*—
Jones, Bryan, 4,274,299, Cl. 74-492.000.
Rao, V. Durga Nageswar, 4,274,811, Cl. 417-64.000.
Roushdy, Hesham A., 4,274,305, Cl. 74-865.000.

Forseth, Dean A., to Hensway, Inc. Incubation method. 4,274,364, Cl. 119-35.000.

Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, to Bayer Aktiengesellschaft. Evaporator for concentrating mineral acid, particularly sulphuric acid. 4,274,910, Cl. 159-1.00C.

Foseco International Limited: *See*—
Kristiansen, Jan O.; and Lynham, C. Richard, 4,274,869, Cl. 75-53.000.

Foss, Rene N.; and Levine, Sidney, to United States of America, Navy. Acoustic imaging system for wire guided torpedo. 4,274,353, Cl. 114-21.00A.

Framatome: *See*—
Ruiz, Pierre, 4,275,447, Cl. 364-494.000.

Francese, Renato: *See*—
Messori, Vittorio; Francese, Renato; and Esposito, Roberto, 4,275,204, Cl. 544-204.000.

Francis, Marion D.: *See*—
Flora, Lawrence; and Francis, Marion D., 4,275,059, Cl. 424-204.000.

Francisco-Arnold, Richard D. Immersion/suspension method for the submarine deployment of high voltage transmission cable. 4,274,757, Cl. 405-161.000.

Franklin, Leslie C., to Ratcliff Tail Lifts Limited. Ramps. 4,274,172, Cl. 14-69.500.

Frank'sche Eisenwerke AG: *See*—
Evers, Heinz; and Goedecke, Hartmut, 4,274,553, Cl. 222-76.000.

Franz, Edward P.: *See*—
Fenner, Robert M.; and Franz, Edward P., 4,274,627, Cl. 272-117.000.

Frear, David L.: *See*—
Buck, Joseph M.; Gallusser, David O.; and Frear, David L., 4,274,702, Cl. 339-217.00R.

Fredd, John V., to Otis Engineering Corporation. Method and system for well testing. 4,274,485, Cl. 166-250.000.

Fredd, John V., to Otis Engineering Corporation. Apparatus for and method of operating a well. 4,274,486, Cl. 166-250.000.

Freeman, Marshall. Tire traction enhancing apparatus. 4,274,463, Cl. 152-213.00R.

Freese, Gary P., to Caterpillar Tractor Co. Cushioned bulldozer blade. 4,274,493, Cl. 172-816.000.

Freisler, Erhard; Lutz, Friedrich; and Zollinger, Hans, to Ruti Machinery Works Ltd. Band guide for shuttleless looms. 4,274,449, Cl. 139-449.000.

French, Douglas A.: *See*—
French, Frederic A.; and French, Douglas A., 4,275,050, Cl. 423-445.000.

French, Frederic A.; and French, Douglas A., to TDC-Technology Development Corporation. Production of ultra-hard particles. 4,275,050, Cl. 423-445.000.

French, Tom; Mitchell, William E.; Kenney, Michael J.; and Holmes, Thomas, to Dunlop Limited. Tire and wheel rim assemblies. 4,274,466, Cl. 152-381.300.

French, Tom: *See—*
Allbert, Barrie J.; French, Tom; Kemp, Ian; and Corner, Michael R., 4,274,465, Cl. 152-379.500.
Frey-Wigger, Paul. Working platform. 4,274,793, Cl. 414-607.000.
Frey, William I.; and Beestrice, William R., to PPG Industries, Inc. Method for developing a release surface on a glass mold. 4,274,856, Cl. 65-24.000.
Fridrich, Elmer G.; and Davenport, John M., to General Electric Company. Electrode with overwind for miniature metal vapor lamp. 4,275,329, Cl. 313-217.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Schnurbus, Heinrich; Nelle, Horst; and Wolf, Wilhelm, 4,274,888, Cl. 148-108.000.
Friedland, David J.; Tewksbury, Floyd L.; and Robinson, Martin A., to Allied Chemical Corporation. Stripping metals from organic solvent with aqueous solution of polymeric phosphates. 4,275,037, Cl. 423-8.000.
Friedman, Joseph; Oberg, Carl L.; and Russell, Larry H., to Rockwell International Corporation. Hydrogenation apparatus. 4,275,034, Cl. 422-194.000.
Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Bernat, Georg; Nolting, Karl-Heinz; and John, Claus, 4,274,442, Cl. 137-625.170.
Frye, Kenneth G.; and Fitzpatrick, Donald C., to Lenox Machine Company, Inc. Slitter for high bulk traveling paper web material. 4,274,319, Cl. 83-430.000.
Fuji Electric Co., Ltd.: *See—*
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, 4,274,424, Cl. 128-686.000.
Fuji Photo Film Co., Ltd.: *See—*
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,275,138, Cl. 430-157.000.
Mikami, Takeshi, 4,275,145, Cl. 430-377.000.
Yamaguchi, Nobutana; Takayama, Satoru; Utumi, Masahiro; and Fujiyama, Masaaki, 4,275,108, Cl. 428-220.000.
Yoneyama, Masakazu; Ino, Shoichi; and Minamizono, Junji, 4,275,146, Cl. 430-523.000.
Fuji Photo Optical Co., Ltd.: *See—*
Numata, Saburo, 4,274,722, Cl. 354-33.000.
Fujiseiko K.K.: *See—*
Haga, Minoru; and Kondo, Kunio, 4,274,774, Cl. 409-232.000.
Fujitsu Fanuc Limited: *See—*
Inaba, Hajimu; and Inagaki, Shigemi, 4,274,802, Cl. 414-783.000.
Kawada, Shigeki; Kobari, Katsuo; and Ishida, Hiroshi, 4,275,342, Cl. 318-490.000.
Fujitsu Limited: *See—*
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, 4,275,093, Cl. 427-89.000.
Takagi, Mikio; Maeda, Mamoru; and Kamioka, Hajime, 4,275,094, Cl. 427-93.000.
Tanaka, Takehiko; Kubota, Yoji; and Kubomura, Kiyoshi, 4,275,456, Cl. 364-900.000.
Fujiwhara, Mitsuto: *See—*
Kojima, Tamotsu; Fujiwhara, Mitsuto; Endo, Takaya; and Iijima, Akio, 4,275,148, Cl. 430-558.000.
Fujiyama, Masaaki: *See—*
Yamaguchi, Nobutana; Takayama, Satoru; Utumi, Masahiro; and Fujiyama, Masaaki, 4,275,108, Cl. 428-220.000.
Fukuda, Kunio: *See—*
Yamashita, Izumi; Fukuda, Kunio; and Tazaki, Kichiya, 4,274,998, Cl. 260-45.75B.
Fukuhara, Toru; and Saegusa, Takashi, to Nippon Kogaku K.K. Metering device of a camera. 4,274,721, Cl. 354-31.000.
Fukumori, Yukitsugu; Sone, Masazumi; Nagae, Hiromitsu; Shida, Masami; Kooriyama, Tsutomu; and Harada, Koji, to Hitachi, Ltd.; and Nissan Motor Company, Limited. Device for electrically connecting spark plug to high-voltage cable. 4,274,695, Cl. 339-97.00S.
Fukumori, Yukitsugu: *See—*
Sone, Masazumi; Suzuki, Kazuhiko; and Fukumori, Yukitsugu, 4,274,843, Cl. 55-139.000.
Fulton, Donald E.; and Curtiss, William P., to Charles Stark Draper Laboratory, Inc., The. Back EMF controlled permanent magnet motor. 4,275,343, Cl. 318-721.000.
Fulton, George G. Convertible bulwark and ramp system for marine vessels. 4,274,355, Cl. 114-255.000.
Fulton, Theodore A., to Bell Telephone Laboratories, Incorporated. Josephson Atto-Weber switch. 4,275,314, Cl. 307-462.000.
Funahara, Toshikazu: *See—*
Nakayama, Fumio; and Funahara, Toshikazu, 4,275,357, Cl. 330-107.000.
Funck, Herbert. Shoe soles with non-slip profile. 4,274,211, Cl. 36-30.00R.
Furukawa Denchi Kabushiki Kaisha: *See—*
Sano, Ichiro, 4,275,128, Cl. 429-88.000.
Fuse, Yuzo: *See—*
Sugita, Junkichi; and Fuse, Yuzo, 4,275,269, Cl. 179-1.0FS.
G. D. Searle & Co.: *See—*
Apple, Martin A.; and Pappo, Raphael, 4,275,192, Cl. 536-17.00A.
G. N. Tool Inc.: *See—*
Nishimura, Takayuki, 4,274,771, Cl. 408-230.000.
G.R.P. Gesellschaft fur Rationelle Psychologie oHG: *See—*
Ertel, Ulrike, 4,274,174, Cl. 15-143.00R.
Gaetano, Salvatore. Exercising apparatus. 4,274,625, Cl. 272-69.000.
GAF Corporation: *See—*
Mackey, E. Scudder; and Pechmann, Karl, 4,275,147, Cl. 430-527.000.
Gaglione, Stanley; and Hanley, Gerard L., to Sperry Corporation. Digital diode phase shifter elements. 4,275,367, Cl. 333-164.000.
Galajda, John E. Template holder and templates. 4,274,459, Cl. 144-144.50R.
Gallaher, David E.: *See—*
Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E., 4,274,539, Cl. 206-554.000.
Gallanis, George P.; Spohr, Albert R.; and Lube, Robert R., to Sunbeam Corporation. Electric shaver. 4,274,199, Cl. 30-34.100.
Gallardo, Vicente C., Jr., to General Electric Company. Staircase blade tip. 4,274,806, Cl. 415-172.00A.
Galliani, Giulio: *See—*
Guzzi, Umberto; Omodei-Sale', Amedeo; and Galliani, Giulio, 4,275,066, Cl. 424-258.000.
Gallo, Benedict J., to United States of America, Army. Cellulase-producing microorganism. 4,275,163, Cl. 435-209.000.
Gallo, Mario; and Wirth, Johannes, to Wirth, Gallo & Co. Mass and force meter. 4,274,501, Cl. 177-210.0FP.
Gallusser, David O.: *See—*
Buck, Joseph M.; Gallusser, David O.; and Frear, David L., 4,274,702, Cl. 339-217.00R.
Galusha, Glenn D.: *See—*
Brown, Roger A.; Clyde, William F.; and Galusha, Glenn D., 4,275,086, Cl. 426-518.000.
Gammon, James A. Ocular fixation device. 4,274,716, Cl. 351-36.000.
Gardner, Harry N.; and Gravelle, Wayne R., to NCR Corporation. Topography for integrated circuits pattern recognition array. 4,275,380, Cl. 340-146.30Z.
Gardner, Hugh C.: *See—*
Berger, Mitchell H.; Matzner, Markus; and Gardner, Hugh C., 4,275,188, Cl. 528-193.000.
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., to American Hospital Supply Corporation. Analytical fluorogenic substrates for proteolytic enzymes. 4,275,153, Cl. 435-13.000.
Garier, Christian; and Paradowski, Henri, to Campagnie Francaise d'Etudes et de Construction Technip. Method and plant for liquefying a gas with low boiling temperature. 4,274,849, Cl. 62-9.000.
Garlock Inc.: *See—*
Cather, Douglas A., Jr., 4,274,641, Cl. 277-153.000.
Garner, Jimmy G.; and Guinn, Kenneth F., to Textron, Inc. Swashplate drive redundancy system. 4,274,808, Cl. 416-114.000.
Garrett Corporation, The: *See—*
Bolliger, Frederic E.; Woodhouse, Geoffrey D.; Mattson, George B.; Anson, Bruce S.; and Hatch, Robert A., 4,274,253, Cl. 60-39.030.
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased, 4,274,254, Cl. 60-39.030.
Garrett, Robert W., to Western Electric Company, Inc. Method and apparatus for removing heat from a workpiece during processing in a vacuum chamber. 4,274,476, Cl. 165-80.00E.
Garvin, Donald F.: *See—*
Stanton, James H.; and Garvin, Donald F., 4,274,973, Cl. 252-34.700.
Gauer, Richard: *See—*
Walkenhorst, Wilfried; Gauer, Richard; Wild, Gerhard; and Muller, Walter, 4,275,177, Cl. 525-53.000.
Geberit AG: *See—*
de Groot, Willem J.; Penner, Horst; Schmied, Irene; and Weber, Peter, 4,274,662, Cl. 285-21.000.
Geens, Maurits: *See—*
Burtin, Jean; and Geens, Maurits, 4,274,748, Cl. 356-431.000.
Van Beeck, Walter P.; Dictus, Alfons J.; Geens, Maurits; Simons, Roger J.; and Burtin, Jean, 4,274,747, Cl. 356-431.000.
Geering, Quinton A., to Fisons Limited. Method and composition for combatting pest. 4,275,060, Cl. 424-218.000.
Geiger, Rolf: *See—*
Konig, Wolfgang; Teetz, Volker; Jager, Georg; and Geiger, Rolf, 4,275,001, Cl. 260-112.5LH.
General Atomic Company: *See—*
Jensen, Torkil H.; Ohyabu, Nobuyoshi; and Hsieh, Chung-Lih, 4,274,919, Cl. 176-3.000.
General Battery Corporation: *See—*
Richards, Donald K., 4,275,131, Cl. 429-163.000.
General Dynamics, Pomona Division: *See—*
Bastian, Thomas W., 4,274,610, Cl. 244-3.220.
General Electric Company: *See—*
Cho, Chong I.; Zukowski, Edward C.; and Speros, Dimitri M., 4,275,330, Cl. 313-218.000.
Dudgeon, Charles D., 4,275,190, Cl. 528-361.000.
Fapiano, Donald J.; and Smith, Michael A., 4,274,273, Cl. 72-13.000.
Fridrich, Elmer G.; and Davenport, John M., 4,275,329, Cl. 313-217.000.
Gallardo, Vicente C., Jr., 4,274,806, Cl. 415-172.00A.
Gilbert, Peter T., 4,274,244, Cl. 53-451.000.
Hatch, Burton D., 4,275,323, Cl. 310-178.000.
Hornung, Richard E., 4,275,388, Cl. 340-384.00E.
Kelley, Fred W., Jr., 4,275,346, Cl. 323-210.000.
Knoble, David W.; and Crane, Thomas A., 4,275,337, Cl. 315-289.000.
Mark, Victor, 4,275,245, Cl. 568-726.000. →

Quinn, Clayton B.; and Wilson, Charles A., II, 4,275,187, Cl. 528-174.000.
Racz, Janos A.; and Seppi, Edward J., 4,275,305, Cl. 250-445.00T.
Snyder, Ronald R.; and Sibley, Lincoln L., Jr., 4,274,325, Cl. 89-12.000.
Starr, James A.; and Punches, James R., 4,274,205, Cl. 33-174.00L.
Stresing, Kurt O., 4,275,331, Cl. 313-318.000.
Urban, Raymond C.; and Quinlan, Robert W., 4,275,109, Cl. 428-273.000.

General Foods Corporation: *See—*
Colten, Frank P.; Halik, Joseph J.; Ravallo, Robert J.; Hegadorn, Joseph L.; and Hynson, Richard B., 4,275,083, Cl. 426-96.000.

General Mills, Inc.: *See—*
Hart, Patricia E.; and Nichols, Tisha, 4,275,088, Cl. 426-554.000.

General Motors Corporation: *See—*
Lederman, Frederick E., 4,274,655, Cl. 280-688.000.
Peeples, Denny L., 4,274,326, Cl. 91-49.000.

Georg Fischer Aktiengesellschaft: *See—*
Hofmann, Franz; and Satmer, Franz, 4,274,360, Cl. 118-303.000.

Gerasin, Michael N.: *See—*
Raupp, Arthur J., Jr.; Gerasin, Michael N.; and Thompson, M. Leonard, 4,274,766, Cl. 407-15.000.

Gerber, Alfred; and Sparro, Francesco, to Gerber, Alfred. Reciprocating piston beam engine. 4,274,367, Cl. 123-52.00A.

Germain, Lee A., to Goodyear Tire & Rubber Company, The. Apparatus for fuel vapor recovery. 4,274,549, Cl. 220-86.00R.

Gessinger, Gernot: *See—*
Buxbaum, Charley; Gessinger, Gernot; and Strassler, Sigfrid, 4,275,123, Cl. 428-547.000.

Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates. Process and apparatus for expediting the mercerization of alkali cellulose. 4,275,195, Cl. 536-101.000.

Giannuzzi, Louis N. Hollow wall screw anchor. 4,274,324, Cl. 411-38.000.

Gibbs & Hill, Inc.: *See—*
Renko, George, 4,274,920, Cl. 176-30.000.

Giede, Wolfgang; and Rutzen, Horst, to Henkel Kommanditgesellschaft auf Aktien. Preparation of quaternary ammonium halides in powder or granular form. 4,275,235, Cl. 564-288.000.

Gilbert, Peter T., to General Electric Company. Method and apparatus for sealing polyester film in mine bolt capsule. 4,274,244, Cl. 53-451.000.

Gill, Donald I.: *See—*
Harrison, Thomas F.; and Gill, Donald I., 4,274,904, Cl. 156-461.000.

Gill, Kenneth E.; and Hilling, Anthony E., to Racal Communications Equipment. Electronic amplifier circuit arrangements. 4,275,360, Cl. 330-276.000.

Gilles, Hans. Hand drive assembly for a wheelchair. 4,274,650, Cl. 280-242.0WC.

Gillette Company, The: *See—*
Varner, Donald E., 4,274,315, Cl. 82-47.000.

Gilovich, Paul A.; and Hickox, Thomas A., to Microcomputer Systems Corp. Tape transport. 4,274,608, Cl. 242-192.000.

Gioia, Alberto, to Gruppo Lepetit S.p.A. Powder flowability test equipment. 4,274,286, Cl. 73-432.00R.

Giometti, Michael A.: *See—*
Baughman, Richard C.; and Giometti, Michael A., 4,274,844, Cl. 55-196.000.

Girardi, Vincent J., to Babcock & Wilcox Company, The. Broaching machine compound shuttle. 4,274,775, Cl. 409-251.000.

GKN Transmissions Limited: *See—*
Fisher, Leslie G., 4,275,122, Cl. 428-542.000.

Glaum, Gerald V.: *See—*
Ettel, Victor A.; Devuyst, Eric A. P.; Babjak, Juraj; Ambrose, John; and Glaum, Gerald V., 4,274,930, Cl. 204-112.000.

Gless, Richard D., Jr.; Dawson, Daniel J.; and Wingard, Robert E., to Dynapol. Process for preparing polymeric colorants having a poly(vinylamine) backbone. 4,275,002, Cl. 260-144.000.

Glinsmann, Gilbert R.: *See—*
Hedges, James H.; and Glinsmann, Gilbert R., 4,274,488, Cl. 166-273.000.

Gnadeberg, Jules: *See—*
Balzarini, Giovanni; Buccino, Giovanni; Gnadeberg, Jules; Papeschi, Roberto; and Slavich, Giancarlo, 4,275,451, Cl. 364-580.000.

Gnyra, Bohdan, to Alcan Research and Development Limited. Removal of oxalate from bayer process liquor. 4,275,043, Cl. 423-130.000.

Goedecke, Hartmut: *See—*
Evers, Heinz; and Goedecke, Hartmut, 4,274,553, Cl. 222-76.000.

Goelz, David W., to Poly-Glas Systems. Roving brake. 4,274,512, Cl. 188-65.100.

Goff, James R.: *See—*
Spence, Adam M.; and Goff, James R., 4,274,765, Cl. 405-303.000.

Goldstein, Richard M.: *See—*
Boll, Harry J.; and Goldstein, Richard M., 4,275,313, Cl. 307-448.000.

Golobay, Gary L., to Conchemco, Incorporated. Apparatus for automatically maintaining the tautness of a mechanical coupling between an actuatable device and an associated actuating mechanism. 4,274,300, Cl. 74-501.50R.

Gomez, I. Luis, to Monsanto Company. Molding compositions and process for preparing same. 4,275,175, Cl. 525-5.000.

Goodhue, Charles T.: *See—*
Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,151, Cl. 435-11.000.
Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,152, Cl. 435-11.000.

Goodman, Richard M.; and Panzer, Hans P., to American Cyanamid Company. Iron ore beneficiation by selective flocculation. 4,274,945, Cl. 209-5.000.

Goodyear Aerospace Corporation: *See—*
Alexander, William C.; Kirk, Richard L.; and Thomsen, Kenneth A., 4,275,376, Cl. 340-52.00R.

Goodyear Tire & Rubber Company, The: *See—*
Germain, Lee A., 4,274,549, Cl. 220-86.00R.
McGraner, James E., 4,274,538, Cl. 206-394.000.

Goold, Lionel A., to Trochem (PTY) Limited. Ore dressing process. 4,274,951, Cl. 209-167.000.

Goshima, Norio: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.

Goto, Kenji: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.

Goullet, Jean: *See—*
de Rancourt de Mimerand, Yvan; and Goullet, Jean, 4,274,782, Cl. 414-104.000.

Goumondy, Jean-Pierre: *See—*
Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, 4,275,045, Cl. 423-249.000.

Goushaw, David W. Continuously refrigerated, automatically ejected block ice machine. 4,274,263, Cl. 62-71.000.

GOW-MAC Instrument Co.: *See—*
Lawson, Alexander E.; Mathieu, Robert J.; and Miller, James M., 4,275,304, Cl. 250-373.000.

Gram, Martin M., to MTS Systems Corporation. Rapid opening, high flow control valve for hydraulic actuator. 4,274,290, Cl. 73-837.000.

Granda, Edward J.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,275,080, Cl. 426-3.000.

Grant, Carl H.: *See—*
Adams, Robert L., Jr.; Grant, Carl H.; and Stevens, Karl W., 4,275,440, Cl. 364-200.000.

Grau, Werner: *See—*
Schoenafinger, Eduard; Motz, Herbert; Ohlinger, Manfred; Deigner, Paul; and Grau, Werner, 4,275,114, Cl. 428-328.000.

Gravelle, Wayne R.: *See—*
Gardner, Harry N.; and Gravelle, Wayne R., 4,275,380, Cl. 340-146.30Z.

Gray, Stanley; and Bhushan, Bharat, to Mechanical Technology Incorporated. Support element for compliant hydrodynamic journal bearings. 4,274,683, Cl. 308-9.000.

Graybill, Clinton: *See—*
Rollins, Ralph T., 4,275,017, Cl. 261-53.000.

Greco, Nicholas P., to Koppers Company, Inc. Separation of phenols. 4,275,246, Cl. 568-750.000.

Green Cross Corporation, The: *See—*
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.

Green, Howard W.: *See—*
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Green, Robert J.: *See—*
Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., 4,274,530, Cl. 198-347.000.

Greenlee, William J.: *See—*
Patchett, Arthur A.; and Greenlee, William J., 4,275,220, Cl. 560-35.000.

Greenway, John M., to Milliken Research Corporation. Apparatus for producing a simulated stria fabric. 4,274,182, Cl. 26-2.00R.

Greer Hydraulics, Incorporated: *See—*
Zahid, Abduz, 4,274,446, Cl. 138-30.000.

Gregg, Richard, to Procter & Gamble Company, The. Method of making drip-type coffee. 4,275,085, Cl. 426-433.000.

Gregory, Francis J.: *See—*
Wei, Peter H. L.; and Gregory, Francis J., 4,275,065, Cl. 424-256.000.

Grimaud, Edouard: *See—*
Lecoq, Jean-Claude; and Grimaud, Edouard, 4,274,969, Cl. 210-721.000.

Grimminger, Hermann; and Reimer, Hans-Joachim, to Hoechst Aktiengesellschaft. Process and device for controlling the content of closed packages as to completeness. 4,274,499, Cl. 177-1.000.

Grimshaw, Keith; and Taylor, Roy, to English Card Clothing Company Limited, The. Carding. 4,274,177, Cl. 19-99.000.

Grinberg, Jan; Jacobson, Alexander D.; and Chow, Kuen, to Hughes Aircraft Company. Three-dimensionally structured microelectronic device. 4,275,410, Cl. 357-68.000.

Grocki, Wayne; and Steinmetz, Richard J., to Zenith Radio Corporation. Anti-spot burn protection for CRT. 4,275,338, Cl. 315-381.000.

Groening, Jurgen: *See—*
Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, 4,274,910, Cl. 159-1.00C.

Grose, Reginald E., to Congoleum Corporation. Dimensionally stable backing materials for surface coverings and methods of making the same. 4,274,916, Cl. 162-145.000.

Gross, Walter O. Depth of field objective. 4,274,725, Cl. 354-196.000.

Grosser, Richard W.; and Long, Virgil L., Sr., to AMF Incorporated. Exercise floor. 4,274,626, Cl. 272-109.000.
Grossman, James M.: *See—*
Grubbs, Dean O.; and Grossman, James M., 4,274,739, Cl. 356-155.000.
Groupement Europeen de la Cellulose: *See—*
Carles, Jacques E.; and Durand, Michel, 4,274,912, Cl. 162-41.000.
Grubbs, Dean O.; and Grossman, James M., to Hunter Engineering Company. Apparatus for monitoring operational status and diagnosis of electronic vehicle wheel alignment equipment. 4,274,739, Cl. 356-155.000.
Grubbs, Dean O.: *See—*
Hollandsworth, William J.; and Grubbs, Dean O., 4,274,738, Cl. 356-155.000.
Grube, William L. Variable ratio belt drive. 4,274,295, Cl. 474-23.000.
Gruber, George P., Jr. Reel technology. 4,274,605, Cl. 242-55.000.
Gruffaz, Max; and Micaelli, Odile, to Rhone-Poulenc Industries. Catalytic preparation of ethyl acetate. 4,275,228, Cl. 560-247.000.
Grumman Aerospace Corporation: *See—*
Cohen, Murray, 4,274,754, Cl. 403-14.000.
Grunert, Wilfried: *See—*
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Grunig, Kurt: *See—*
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Gruppo Lepetit S.p.A.: *See—*
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Guzzi, Umberto; Omodei-Sale', Amedeo; and Galliani, Giulio, 4,275,066, Cl. 424-258.000.
Grutsch, James F.; Mallatt, Russell C.; and Walk, Joe D., to Standard Oil Company (Indiana). Process for the purification of water. 4,274,968, Cl. 210-666.000.
GTE Automatic Electric Laboratories Incorporated: *See—*
Khera, M. Ibrahim, 4,275,458, Cl. 364-900.000.
Mennino, Michael F., Jr.; and Coppin, Donald J., 4,275,272, Cl. 179-7.1TP.
Guerrieri, Salvatore A. Bubble cap tray. 4,275,022, Cl. 261-114.0TC.
Guest, William H. Loader fork. 4,274,798, Cl. 414-724.000.
Guiliano, Basil A.: *See—*
Hall, Richard E.; and Guiliano, Basil A., 4,275,202, Cl. 544-192.000.
Guim, Raul. Fluorescent lamp with plural sealed enclosures and electrical connector therefor. 4,275,325, Cl. 313-51.000.
Guinn, Kenneth F.: *See—*
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Gulf Oil Corporation: *See—*
Murphy, Clarence R.; Thackabeery, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., sole beneficiary, 4,274,917, Cl. 162-146.000.
Gunji, Naoki; and Ito, Saburo, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for continuously hot-dip galvanizing steel strip. 4,275,098, Cl. 427-345.000.
Guntersdorfer, Max: *See—*
Heywang, Walter; Guntersdorfer, Max; and Kleinschmidt, Peter, 4,275,390, Cl. 340-554.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, to Lever Brothers Company. β-Lactone esters. 4,275,007, Cl. 260-343.900.
Gutleber, Frank S., to United States of America, Army. Interference canceling random access discrete address multiple access system. 4,275,397, Cl. 343-100.0CS.
Guzzi, Umberto; Omodei-Sale', Amedeo; and Galliani, Giulio, to Gruppo Lepetit S.p.A. Antireproductive tricyclic ortho-fused nitrogen containing compounds. 4,275,066, Cl. 424-258.000.
H. J. Langen & Sons Ltd.: *See—*
Langen, Marinus J. M.; and Strauss, Edgar H., 4,274,245, Cl. 53-558.000.
Haas, Franz, Jr.: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,274,535, Cl. 198-493.000.
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann. Wafer sheet cooler. 4,274,535, Cl. 198-493.000.
Haas, Johann: *See—*
Haas, Franz, Sr.; Haas, Franz, Jr.; and Haas, Johann, 4,274,535, Cl. 198-493.000.
Hachtmann, James E.: *See—*
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Hackett, Le Roy H., Jr., to Hughes Aircraft Company. Process and mask for ion beam etching of fine patterns. 4,275,286, Cl. 219-121.0EK.
Hackett, Stephen J.: *See—*
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Hafele, Carl-Heinz. Automatic low-friction check valve. 4,274,434, Cl. 137-498.000.
Haga, Minoru; and Kondo, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Fujiseiko K.K. Tool-fitting device. 4,274,774, Cl. 409-232.000.
Hagiwara, Kotaro: *See—*
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Hagstrom, Arthur A., to Teletype Corporation. Holder for a decorative trim strip. 4,274,237, Cl. 52-312.000.
Hahn, Neva N.: *See—*
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Hahn, Robert H.; Hahn, Neva N.; and Salzman, Noah. Depilatory tweezer. 4,274,413, Cl. 128-303.130.
Haikkala, Pekka O., to OY. Tampella AB. Method of and a grinder for grinding wood under pressure. 4,274,600, Cl. 241-18.000.
Haines, Paul G.: *See—*
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Hajdu, Klara: *See—*
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Halik, Joseph J.: *See—*
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Halko, Pekka: *See—*
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Hall, John B.: *See—*
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Hall, Michael J., to Hoffmann-La Roche Inc. Nutrient medium. 4,275,154, Cl. 435-32.000.
Hall, Richard E.; and Guiliano, Basil A., to FMC Corporation. Production of a purified cyanuric acid dihydrate. 4,275,202, Cl. 544-192.000.
Hamada, Seiji: *See—*
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Hamamoto, Tadanao: *See—*
Nakano, Tasuku; and Hamamoto, Tadanao, 4,275,379, Cl. 340-81.00R.
Hamel, Emilien. Portable crimping tool for attachment of sheet metal plates to a frame. 4,274,352, Cl. 113-57.000.
Hammann, Ingeborg: *See—*
Naumann, Klaus; Behrenz, Wolfgang; Hammann, Ingeborg; Klauke, Erich; and Marhold, Albrecht, 4,275,250, Cl. 568-812.000.
Hammar, Walton J.; and Rustad, Mark A., to Riker Laboratories, Inc. Derivatives of 2-nitrobenzofuran. 4,275,221, Cl. 560-53.000.
Hammelmann, Paul. Apparatus for treating upright surfaces. 4,274,590, Cl. 239-185.000.
Hanada, Hironori: *See—*
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, 4,275,194, Cl. 536-20.000.
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Hanke, Reinhard; and Jahn, Kornel, to Voest-Alpine Aktiengesellschaft. Apparatus for separating solids from a suspension. 4,274,952, Cl. 209-273.000.
Hanley, Gerard L.: *See—*
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Hanna Furnace Corporation, The: *See—*
Mahar, Kevin D., 4,274,923, Cl. 201-39.000.
Hanna, Terry J., to Owens-Corning Fiberglas Corporation. Method and apparatus for the production of glass fibers. 4,274,853, Cl. 65-2.000.
Hansen, Peter B.: *See—*
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Happich, Karl-Christoph: *See—*
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Harada, Koji: *See—*
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Harada, Kunihiro: *See—*
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Harada, Saburo: *See—*
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Harer, Helmut; and Juhasz, Josef, to Robert Bosch GmbH. Arrangement for monitoring batteries. 4,275,351, Cl. 324-427.000.
Harford, Jack R., to RCA Corporation. Gain controlled amplifier using a pin diode. 4,275,362, Cl. 330-283.000.
Hargett, Jerry D.; and Nash, Alfred C., to N & H Manufacturing, Inc. Jumper cable arrangement for a vehicle. 4,274,690, Cl. 339-10.000.
Harita, Yoshiyuki: *See—*
Hosaka, Yoshihiro; Harita, Yoshiyuki; Kurokawa, Mitsuo; Harada, Kunihiro; and Tagami, Eijiro, 4,275,142, Cl. 430-271.000.
Harmsen, Lothar; Bick, Klaus; Lachenmayer, Wilhelm; Vennmann, Friedhelm; and Zieschang, Jurgen, to Benteler-Werke AG. Water-cooled box designed as wall element for a melting furnace. 4,275,258, Cl. 13-32.000.

Harris, John F., to Fisons Limited. Process for preparing an organic compound. 4,275,247, Cl. 568-767.000.
Harris, Monty E., to Dow Chemical Company, The. Retrievable bridge plug and method of setting. 4,274,489, Cl. 166-315.000.
Harrison, Thomas F.; and Gill, Donald I. Tape dispenser and applicator assembly. 4,274,904, Cl. 156-461.000.
Harrod, Michael K.: *See—*
Mueller, Edward E.; and Harrod, Michael K., 4,274,787, Cl. 414-412.000.
Hart, Patricia E.; and Nichols, Tisha, to General Mills, Inc. Dry mix for layer cake containing citrus juice vesicle solids. 4,275,088, Cl. 426-554.000.
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, to Maschinenfabrik Meyer AG. Filtration process using polyolefin fibrids as filter aids. 4,274,971, Cl. 210-778.000.
Hartwig-Hartoglass, Inc.: *See—*
Abell, Irwin R., 4,274,234, Cl. 52-63.000.
Harvey, Brian F., to Colin Robert Alty. Display devices. 4,274,218, Cl. 40-505.000.
Harvey Hubbell Incorporated: *See—*
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Hasco-Normalien Hasenclever & Co.: *See—*
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Hatch, Burton D., to General Electric Company. Active shield for disk-drum acyclic machine. 4,275,323, Cl. 310-178.000.
Hatch, Robert A.: *See—*
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Hatcher, Ian: *See—*
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Hattori, Tadashi: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.
Watanabe, Toshio; and Hattori, Tadashi, 4,275,328, Cl. 313-123.000.
Hauser, Georg, to J. Strobel & Sohne GmbH & Co. Ironing table. 4,274,214, Cl. 38-1.00C.
Hauser, Hans-Ulrich, to Bucher-Guyer AG Maschinenfabrik. Hay harvesting machine. 4,274,248, Cl. 56-370.000.
Hauser, Hans-Ulrich, to Bucher-Guyer AG Maschinenfabrik. Hay harvesting machine. 4,274,249, Cl. 56-370.000.
Hawley, Gil R., to Phillips Petroleum Company. Thermally stabilizing polymers of ethylene. 4,274,996, Cl. 260-45.90R.
Hayazaki, Tadao. Baseball practice bat. 4,274,631, Cl. 273-26.00B.
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Hazel, John G.; and Steiger, Roger A., to PPG Industries, Inc. Method for preparing titanium diboride shapes. 4,275,026, Cl. 264-67.000.
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Menningen, Roland; Ehrsam, Kurt; Oberhansli, Jurg; and Grunig, Kurt, 4,275,295, Cl. 250-227.000.
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Colten, Frank P.; Halik, Joseph J.; Ravallo, Robert J.; Hegadorn, Joseph L.; and Hynson, Richard B., 4,275,083, Cl. 426-96.000.
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Heitmann, Heinrich: *See—*
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Helfert, Herbert; and Davis, Pauls, to BASF Wyandotte Corporation. Linear polyalkylene ether glycols of high molecular weight. 4,275,244, Cl. 568-624.000.
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Bedell, John R.; Kavesh, Sheldon; Hemmat, Naim S.; Draizen, Seymour; and Smith, Robert W., 4,274,473, Cl. 164-423.000.
Henderson, Alan; and Chamblee, L. E., to Inter Chem, Ltd. Plant growth stimulant. 4,274,861, Cl. 71-117.000.
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Giede, Wolfgang; and Rutzen, Horst, 4,275,235, Cl. 564-288.000.
Stein, Werner; and Christophliemk, Peter, 4,275,048, Cl. 423-329.000.
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Forseth, Dean A., 4,274,364, Cl. 119-35.000.
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Herbert Schwind GmbH & Co. KG: *See—*
Reiner, Josef, 4,274,715, Cl. 351-30.000.
Hercules Incorporated: *See—*
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,274,251, Cl. 57-206.000.
Herridge, Frederick, to Austin Hoy and Company Limited. Socketed boss having means for retaining a tool shank. 4,274,678, Cl. 299-92.000.
Herscovici, Saul, to Power Engineering and Manufacturing, Ltd. Gear reduction apparatus. 4,274,302, Cl. 74-661.000.
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Heywang, Walter; Guntersdorfer, Max; and Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Burglar alarm device. 4,275,390, Cl. 340-554.000.
Hibell, Ernest G., to Lucas Industries Limited. Electrical assembly. 4,275,389, Cl. 340-388.000.
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Earl, Gary W.; and Hickman, Howard M., 4,275,236, Cl. 564-298.000.
Hickox, Thomas A.: *See—*
Gilovich, Paul A.; and Hickox, Thomas A., 4,274,608, Cl. 242-192.000.
Hicks, Brenda G.: *See—*
Hicks, Thurmond A.; and Hicks, Brenda G., 4,275,384, Cl. 340-309.400.
Hicks, Kevin J. Dispensing apparatus having continuously driven conveyor. 4,274,551, Cl. 221-78.000.
Hicks, Thurmond A.; and Hicks, Brenda G. Portable medicine cabinet with timer. 4,275,384, Cl. 340-309.400.
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Himmetsberger, Alois; and Wittmann, Heinz, to TMC Corporation. Safety ski binding. 4,274,653, Cl. 280-618.000.
Hinz, Jurgen; and Brudermanns, Karola, to Bayer Aktiengesellschaft. Alkyl sulphonic acid phenyl esters substituted by carboxylic acid esters. 4,274,991, Cl. 260-30.80R.
Hinze, Kenneth J., to Dow Chemical Company, The. Stabilization of polyether polyols and polyurethane foams prepared therefrom. 4,275,173, Cl. 521-117.000.
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Hirs, Gene. Pressure filter. 4,274,961, Cl. 210-225.000.
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Fukumori, Yukitsugu; Sone, Masazumi; Nagae, Hiromitsu; Shida, Masami; Kooriyama, Tsutomu; and Harada, Koji, 4,274,695, Cl. 339-97.00S.
Kishi, Atsuo; and Sudo, Toshio, 4,274,813, Cl. 417-269.000.
Saitou, Tsuyoshi; and Ito, Tsuneo, 4,275,312, Cl. 307-463.000.
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Hoagland, Jesse. Weight lifting bar apparatus. 4,274,628, Cl. 272-123.000.
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Ando, Tsunekazu, 4,275,365, Cl. 333-131.000.
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Konig, Wolfgang; Teetz, Volker; Jager, Georg; and Geiger, Rolf, 4,275,001, Cl. 260-112.5LH.
Lorenz, Peter R.; Weinmann, Ernst; and Majer, Mirko, 4,275,165, Cl. 435-235.000.
Stahlhofen, Paul, 4,275,139, Cl. 430-192.000.
Walkenhorst, Wilfried; Gauer, Richard; Wild, Gerhard; and Muller, Walter, 4,275,177, Cl. 525-53.000.

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Hoffmann, Gunther: *See—*
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Hoffmann-La Roche Inc.: *See—*
Dorn, Franz, 4,275,079, Cl. 424-324.000.
Hall, Michael J., 4,275,154, Cl. 435-32.000.
Hofmann, Franz; and Satmer, Franz, to Georg Fischer Aktiengesellschaft. Apparatus for regenerating used foundry sand. 4,274,360, Cl. 118-303.000.
Hoh, George L., to Du Pont de Nemours, E. I., and Company. Curable blends of chloroprene polymer and ethylene copolymer. 4,275,181, Cl. 525-189.000.
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Hollandsworth, William J.; and Grubbs, Dean O., to Hunter Engineering Company. Rotary body run-out remote sensing method and apparatus especially applicable to vehicle wheel aligners. 4,274,738, Cl. 356-155.000.
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Hollister Incorporated: *See—*
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Holmes, Barry A.: *See—*
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Holmes, Thomas: *See—*
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Holmes, Trent H., to United Technologies Corporation. Floating vane support. 4,274,805, Cl. 415-138.000.
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Holznagel, Melvin A., to Tektronix, Inc. Direct view storage tube having improved readout performance. 4,275,355, Cl. 328-124.000.
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Hoodwin, Louis S. Hydraulic testing system. 4,274,281, Cl. 73-118.000.
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Hope, Peter: *See—*
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Horgan, John J., to United Technologies Corporation. Closed cycle contrarotating gas turbine power plant utilizing helium as the working medium. 4,274,261, Cl. 60-682.000.
Horikawa, Yuji: *See—*
Nei, Hiromichi; Ohtani, Ryoichi; Ohshima, Iwao; and Horikawa, Yuji, 4,274,280, Cl. 73-61.0LM.
Horiuchi, Yoshifumi: *See—*
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Hornung, Richard E., to General Electric Company. Piezoelectric audible alarm frequency self-calibration system. 4,275,388, Cl. 340-384.00E.
Hosaka, Yoshihiro; Harita, Yoshiyuki; Kurokawa, Mitsuo; Harada, Kunihiro; and Tagami, Eijiro, to Japan Synthetic Rubber Co., Ltd. Photosensitive compositions and printing plates containing same. 4,275,142, Cl. 430-271.000.
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de Rancourt de Mimerand, Yvan; and Goullet, Jean, 4,274,782, Cl. 414-104.000.
Hotta, Kyoichi, to Kabushiki Kaisha Kyowa Kikai Seisakusho. Device for stripping a fibrous web from a doffer in a carding machine. 4,274,178, Cl. 19-106.00R.
Houck, David J., to Electronic Modules Corporation. Portable hand-held length probe with tracing-unit-actuated length signal output control switch. 4,275,264, Cl. 178-18.000.
Housman, Robert J., to Smith International, Inc. Wear resistant composite insert, boring tool using such insert, and method for making the insert. 4,274,840, Cl. 51-307.000.
Houston, Rex: *See—*
Doerge, Gail W., 4,274,450, Cl. 140-82.000.
Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Image intensifier tube with a light-absorbing electron-permeable layer. 4,275,326, Cl. 313-102.000.
Howard, Arthur G. Air-cleaning, heat-exchange apparatus. 4,274,845, Cl. 55-222.000.
Howard, John F., to Canadian General Electric Co., Ltd. Combination expulsion fuse. 4,275,373, Cl. 337-144.000.
Howes, Peter. Fuel injection nozzles. 4,274,596, Cl. 239-533.900.
Howland, Bradford, to Massachusetts Institute of Technology. Test patterns for lens evaluation. 4,274,737, Cl. 356-124.500.
Howmedica Inc.: *See—*
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Huber, Andre; Muller, Alain; and Soffer, Jacques, to Alsthom-Atlantique. Electronic power supply circuit for a series connected DC motor. 4,275,341, Cl. 318-376.000.
Huber, Daniel L.; Paulson, Thomas M.; and Williams, James M., to International Business Machines Corporation. Keyboard multiple switch assembly. 4,274,752, Cl. 400-477.000.
Huber, Georg: *See—*
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Huber, Klaus K. G.: *See—*
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Hubert-Brierre, Yves A., to Delalande S.A. Process for preparing 4(5)-hydroxymethyl 5(4)-lower alkyl imidazoles. 4,275,216, Cl. 548-342.000.
Huckaby, Leonard. Internal fluid control valve for use in oil well remedial operations. 4,274,490, Cl. 166-325.000.
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Huffman, Stanley S., to Coors Container Company. Apparatus for dispensing fluid sealant. 4,274,456, Cl. 141-157.000.
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Hackett, Le Roy H., Jr., 4,275,286, Cl. 219-121.0EK.
Maeding, Dale; and Pines, Michael Y., 4,275,315, Cl. 307-221.00D.
Marom, Emanuel, 4,275,399, Cl. 343-113.00R.
Tangonan, Gregory L., 4,274,706, Cl. 350-96.190.
Hughes, Tommy L.; and Spector, George. Outlook ladder seat. 4,274,508, Cl. 182-116.000.
Hulting, Thomas S., Jr., to Caterpillar Tractor Co. Tire buffing tool and method. 4,274,898, Cl. 156-98.000.
Hunt, Eric, to Beecham Group Limited. Decarboxyclavulanic acid thio ethers, their preparation and use. 4,275,067, Cl. 424-263.000.
Hunter, Edwin J., to Toro Company, The. Moisture and pressure responsive irrigation system. 4,274,583, Cl. 239-1.000.
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Grubbs, Dean O.; and Grossman, James M., 4,274,739, Cl. 356-155.000.
Hollandsworth, William J.; and Grubbs, Dean O., 4,274,738, Cl. 356-155.000.
Huret, Roger. Derailleur gear-change assembly for a bicycle. 4,274,828, Cl. 474-82.000.
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Hutson, Thomas, Jr., to Phillips Petroleum Company. Isomerization of hydrocarbon feed. 4,275,257, Cl. 585-738.000.
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Iizuka, Haruhiko: *See*—
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Ikenaga, Yukio; and Matsuno, Osamu, to Celanese Corporation. Polyacetal molding composition. 4,274,986, Cl. 260-22.0CQ.
Illakowicz, Jan; and Enfield, Derek B. Tubes and structures formed thereby. 4,274,621, Cl. 266-61.000.
Illinois Tool Works Inc.: *See*—
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Imai, Tamotsu; Homeier, Edwin H.; and Mackowiak, David E., to UOP Inc. Oxo alcohol synthesis with rhodium catalyst recycle. 4,275,252, Cl. 568-909.000.
Imbert, Christian; Levy, Yves; and Loulergue, Jean-Claude, to Agence Nationale de Valorisation de la Recherche (ANVAR). Method and device for converting thermal images into secondary images, e. g. visible images. 4,275,302, Cl. 250-330.000.
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Imperial Chemical Industries Limited: *See*—
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Inaba, Hajimu; and Inagaki, Shigemi, to Fujitsu Fanuc Limited. Automated device. 4,274,802, Cl. 414-783.000.
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Yoneyama, Masakazu; Ino, Shoichi; and Minamizono, Junji, 4,275,146, Cl. 430-523.000.
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Adams, Robert L., Jr.; Grant, Carl H.; and Stevens, Karl W., 4,275,440, Cl. 364-200.000.
Bartkus, Edward A.; and Price, Robert L., 4,275,107, Cl. 428-220.000.
Burke, Michael J.; and Collins, David W., 4,275,339, Cl. 318-138.000.
Dewey, Anthony G.; and Sincerbox, Glenn T., 4,275,395, Cl. 340-706.000.
Huber, Daniel L.; Paulson, Thomas M.; and Williams, James M., 4,274,752, Cl. 400-477.000.
Li, Pei-Ching, 4,275,409, Cl. 357-54.000.
Makosch, Gunter; Schedewie, Franz; Schmackpfeffer, Arno; and Ziller, Jorg, 4,275,288, Cl. 219-121.0LR.
Marrello, Vincent; Onton, Aare; and Ruhle, Wolfgang, 4,275,336, Cl. 315-246.000.
Shariff, Rafique S., 4,274,576, Cl. 228-264.000.
Silvestri, Victor J.; Tang, Denny D.; and Wiedmann, Siegfried K., 4,274,891, Cl. 148-175.000.
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Sprecker, Mark A.; and Hall, John B., 4,275,251, Cl. 568-817.000.
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,275,087, Cl. 426-538.000.
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International Nickel Company, Inc., The: *See*—
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International Standard Electric Corporation: *See*—
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International Telephone and Telegraph Corporation: *See*—
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Interox Chemicals Limited: *See*—
Ozensoy, Erol; and Burkin, Alfred R., 4,275,039, Cl. 423-54.000.
INTERx Research Corporation: *See*—
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,275,064, Cl. 424-253.000.
Zupan, Jacob A., 4,275,219, Cl. 560-29.000.
Ionic Controls, Inc.: *See*—
Savage, Erle B., Jr., 4,275,112, Cl. 428-310.000.
Ionics Inc.: *See*—
MacDonald, Russell J., 4,275,227, Cl. 560-222.000.
Ireland, Robert G.; and Tramontini, Vernon N., to Stewart-Warner Corporation. Dry cooling tower with water augmentation. 4,274,481, Cl. 165-122.000.
Irvine, George D., to Tate & Lyle Limited. Synthetic bone ash. 4,274,879, Cl. 106-39.500.
Ishida, Akio: *See*—
Kanamoto, Sakumi; and Ishida, Akio, 4,274,415, Cl. 128-321.000.
Ishida, Hiroshi: *See*—
Kawada, Shigeki; Kobari, Katsuo; and Ishida, Hiroshi, 4,275,342, Cl. 318-490.000.
Ishida, Takashi, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,275,463, Cl. 368-187.000.
Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Constant light intensity electronic flash device. 4,275,335, Cl. 315-241.00P.
Ishihara, Masaru: *See*—
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, 4,275,157, Cl. 435-115.000.
Ishihara Sangyo Kaisha, Ltd.: *See*—
Murasawa, Sadao; and Maruo, Masatsuyo, 4,275,136, Cl. 430-117.000.
Ishii, Kiyoshi: *See*—
Osawa, Keiichi; Ishii, Kiyoshi; and Nishimura, Hiroyuki, 4,274,384, Cl. 123-568.000.
Ishii, Shizuo: *See*—
Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, 4,274,726, Cl. 354-173.000.
Ishikawa, Masao: *See*—
Nakamura, Kenji; Ishikawa, Masao; and Ajimine, Akio, 4,274,358, Cl. 116-288.000.
Ison, Robin R., to Dow Chemical Company Limited. Process for preparing 1-aryl-2-benzimidazolinones. 4,275,215, Cl. 548-305.000.
Ito, Akira: *See*—
Takahashi, Masaaki; and Ito, Akira, 4,275,253, Cl. 585-7.000.
Ito, Hiroshi: *See*—
Shindo, Yoshio; and Ito, Hiroshi, 4,274,303, Cl. 74-740.000.
Ito, Kazuo, to Toyo Seikan Kaisha Ltd. Foam generating and dispensing device. 4,274,594, Cl. 239-327.000.
Ito, Saburo: *See*—
Gunji, Naoki; and Ito, Saburo, 4,275,098, Cl. 427-345.000.
Ito, Tsuneo: *See*—
Saitou, Tsuyoshi; and Ito, Tsuneo, 4,275,312, Cl. 307-463.000.
Itoh, Katsumi: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.
Itoh, Shuji; and Yoshida, Yoji, to Kyokuto Fatty-Acid Corporation. Apparatus for making reinforced, double faced corrugated board. 4,274,905, Cl. 156-462.000.
Itooka, Akira: *See*—
Sakamoto, Takashi; and Itooka, Akira, 4,275,413, Cl. 358-80.000.
ITT Industries, Inc.: *See*—
Berisch, Volker, 4,274,518, Cl. 188-344.000.
Ivel, Leonard L., to Warner & Swasey Company, The. Method and apparatus for dressing grinding wheels. 4,274,388, Cl. 125-11.0TP.
Ivko, Joseph J.; and Ivko, Renette. Self-aligning cable guide assembly. 4,274,165, Cl. 3-12.000.
Ivko, Renette: *See*—
Ivko, Joseph J.; and Ivko, Renette, 4,274,165, Cl. 3-12.000.
Iwai, Takashi: *See*—
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, 4,275,093, Cl. 427-89.000.
Iwaki, Katsutaro: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Shock control arrangement in hydraulic control system of automatic power transmission. 4,274,307, Cl. 74-869.000.
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Iwasaki, Motoaki: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and system for controlling ignition timing of internal combustion engines. 4,274,379, Cl. 123-425.000.
J & H Equipment, Inc.: *See*—
Jackson, Allen S., 4,274,953, Cl. 209-326.000.
J. I. Case Company: *See*—
Pedersen, Carl O., 4,274,328, Cl. 91-445.000.
J. Strobel & Sohne GmbH & Co.: *See*—
Hauser, Georg, 4,274,214, Cl. 38-1.00C.
Jack, Douglas S.: *See*—
Lafreniere, Earl W.; and Jack, Douglas S., 4,274,571, Cl. 294-147.000.
Jack, Stanton E.: *See*—
McNeely, Wray G.; Jack, Stanton E.; and O'Dette, John H., 4,274,894, Cl. 149-7.000.
Jackson, Allen S., to J & H Equipment, Inc. Vibrating screen separator. 4,274,953, Cl. 209-326.000.
Jacob, Susan R.: *See*—
Brown, Patrick M.; and Jacob, Susan R., 4,274,834, Cl. 23-302.00R.
Jacobs, Brian J. Supporting means for nets and the like for sporting activities. 4,274,632, Cl. 273-29.0BC.
Jacobs, Stanley: *See*—
Walter, Merrill H.; and Jacobs, Stanley, 4,274,350, Cl. 112-235.000.
Jacobson, Alexander D.: *See*—
Grinberg, Jan; Jacobson, Alexander D.; and Chow, Kuen, 4,275,410, Cl. 357-68.000.
Jacobsson, Curt: *See*—
Aviander, Stig; and Jacobsson, Curt, 4,275,356, Cl. 328-129.000.
Jacomini, Omar J. Helicopter rotating blade detection system. 4,275,396, Cl. 343-5.0SA.
Jadach, Albert A., to Towne Robinson Fastener Company. Method of welding capped wheel nut. 4,275,285, Cl. 219-93.000.
Jager, Georg: *See*—
Konig, Wolfgang; Teetz, Volker; Jager, Georg; and Geiger, Rolf, 4,275,001, Cl. 260-112.5LH.
Jahn, Kornel: *See*—
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Jahn, Ulrich: *See*—
Thiele, Kurt; Ahmed, Quazi; Jahn, Ulrich; and Adrian, Rudolf, 4,275,068, Cl. 424-266.000.
James, David H.; and Junco, Manuel F., to Tannetics, Inc. Horizontal merchandising cooler. 4,274,267, Cl. 62-252.000.
Jamestown Lounge Company, a Division of Arbor Industries, Inc.: *See*—
Bradshaw, Bruce E., 4,274,685, Cl. 312-7.0TV.
Jannotta, Louis J. Apparatus for monitoring and controlling vessels containing liquid. 4,275,382, Cl. 340-151.000.
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased (by Salisbury, Judith M., administratrix), to Garrett Corporation, The. Turbine engine fuel schedule valve and method. 4,274,254, Cl. 60-39.030.
Janssen, Klaus; Peters, Werner; and Schilling, Hans-Dieter, to Bergwerksverband GmbH. Process for generating combustible gases, liquid coal byproducts and superheated steam from coal. 4,274,941, Cl. 208-8.00R.
Japan Electric Industry Development Association: *See*—
Kagami, Akiyasu; and Tanigami, Yoshinori, 4,275,333, Cl. 313-495.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Hosaka, Yoshihiro; Harita, Yoshiyuki; Kurokawa, Mitsuo; Harada, Kunihiro; and Tagami, Eijiro, 4,275,142, Cl. 430-271.000.
Jenkins, George R.: *See*—
Hollingsworth, Frank H.; Jenkins, George R.; Kirkpatrick, John W.; and Mower, Lawrence N., 4,274,487, Cl. 166-261.000.
Jenkins, William A., to Monarch Marking Systems, Inc. Composite web of pressure sensitive labels. 4,274,661, Cl. 283-21.000.
Jenkins, William A., to Monarch Marking Systems, Inc. Method of dispensing labels. 4,274,902, Cl. 156-344.000.
Jensen, Billy M.; Brunner, Ronald H. M.; and Wong, Lang S., to Wong, Lang S. Wafer baking machine. 4,274,331, Cl. 99-373.000.
Jensen, Torkil H.; Ohyabu, Nobuyoshi; and Hsieh, Chung-Lih, to General Atomic Company. Systems for merging of toroidal plasmas. 4,274,919, Cl. 176-3.000.
Jeppesen, Borge: *See*—
Vesterager, Peter K. R.; and Jeppesen, Borge, 4,274,418, Cl. 128-635.000.
Jeumont-Schneider: *See*—
Salmon, Jean, 4,274,611, Cl. 246-34.00R.
Jobst Institute, Inc.: *See*—
Mummert, Thomas A., 4,274,399, Cl. 128-26.000.
Johansson, Johan G. I., to Defibrator Aktiebolag. Rotary grinding disc for defibrating apparatus. 4,274,602, Cl. 241-298.000.
John, Claus: *See*—
Bernat, Georg; Nolting, Karl-Heinz; and John, Claus, 4,274,442, Cl. 137-625.170.
John, Frederick W.: *See*—
Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., 4,274,225, Cl. 46-227.000.
John, Philippe: *See*—
Seifert, Eberhard; and John, Philippe, 4,274,447, Cl. 139-97.000.
Johns-Manville Corporation: *See*—
Corbin, Raymond L.; and Reinhart, Robert F., 4,274,243, Cl. 52-748.000.
Johnson, Fred I. Can handling system. 4,274,532, Cl. 198-429.000.
Johnson, Frederick: *See*—
Johnson, Stanley F., 4,274,762, Cl. 405-259.000.
Johnson & Johnson: *See*—
Passafiume, Anthony; Lamber, Clarence F.; and Dickover, William, 4,274,318, Cl. 83-177.000.
Johnson, Kenneth D.: *See*—
Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., 4,274,225, Cl. 46-227.000.
Johnson, Lanny L.; and Bonnell, Leonard J., to Dyonics, Inc. Surgical instrument. 4,274,414, Cl. 128-305.000.
Johnson, Matthey & Co., Limited: *See*—
Collier, Owen N.; and Hackett, Stephen J., 4,274,877, Cl. 75-252.000.
Johnson, Richard F.; and Wiers, John W., to Rockwell International Corporation. Vehicle passive occupant restraining system. 4,274,657, Cl. 280-803.000.
Johnson, Robert N.: *See*—
Barth, Bruce P.; Johnson, Robert N.; and Mayer, Walter P., 4,275,172, Cl. 521-112.000.
Johnson, Stanley F., to Johnson, Frederick. Prestressed rock truss. 4,274,762, Cl. 405-259.000.
Johnson, Thomas H. Apparatus for stretching an animal hide. 4,274,270, Cl. 69-19.300.
Johnston, Max M., to Polyvend Inc. Method and apparatus for sensing pressure. 4,275,393, Cl. 340-688.000.
Jones, Bryan, to Ford Motor Company. Collapsible steering column. 4,274,299, Cl. 74-492.000.
Jones, Derek, to A.C. Sprayers Inc. Spraying apparatus employing a skirt structure. 4,274,589, Cl. 239-167.000.
Jones, Louis F., to United States of America, Navy. Pressure mine sweeping. 4,274,354, Cl. 114-244.000.
Jony nee Acs, Julia: *See*—
Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, 4,274,597, Cl. 239-542.000.
Jordan, Frederick L., to Oryx, Inc. Method and composition for modifying burning of sulfur in coals and hydrocarbon fuels. 4,274,835, Cl. 44-1.0SR.
Joubert, Raymond J. M., to Societe Nationale de'Etude et de Constr. de Moteurs d'Aviation. Movable blast pipes for jet engines. 4,274,593, Cl. 239-265.350.
Joy, Michael; Moon, Richard E.; Quashem, Abul; Lo, Alex; and Dayal, Vijay S. Artificial replacement for a larynx. 4,274,162, Cl. 3-1.300.
Juhasz, Josef: *See*—
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Julke, Elias: *See*—
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, 4,274,971, Cl. 210-778.000.
Jullien, Graham A., to Oqilvy, James J. Game switch matrix. 4,274,638, Cl. 273-238.000.
Junco, Manuel F.: *See*—
James, David H.; and Junco, Manuel F., 4,274,267, Cl. 62-252.000.
Jung, Wilfried; and Rau, Peter, to Kraftwerk Union Aktiengesellschaft. Fuel assembly for fast nuclear reactors. 4,274,921, Cl. 176-78.000.
Junker, Alois: *See*—
Bardenheuer, Friedrich; Konig, Horst; Junker, Alois; and Rath, Gero, 4,274,867, Cl. 75-13.000.
Jurkowski, Walter J.: *See*—
Beck, Christian A.; Jurkowski, Walter J.; and Pegg, Charles E., 4,274,362, Cl. 118-657.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Ishida, Takashi, 4,275,463, Cl. 368-187.000.
Kabushiki Kaisha Kyowa Kikai Seisakusho: *See*—
Hotta, Kyoichi, 4,274,178, Cl. 19-106.00R.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Nakano, Tasuku; and Hamamoto, Tadanao, 4,275,379, Cl. 340-81.00R.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Mizuno, Masakazu; Igarashi, Isemi; and Inagaki, Hazime, 4,274,423, Cl. 128-675.000.
Kabushiki Kaishi Yamazaki Tekkosho: *See*—
Norimatsu, Michio, 4,274,192, Cl. 29-568.000.
Kaeding, Warren W.: *See*—
Chu, Chin-Chiun; and Kaeding, Warren W., 4,275,256, Cl. 585-467.000.
Kagami, Akiyasu; and Tanigami, Yoshinori, to Dai Nippon Toryo Co., Ltd.; and Japan Electric Industry Development Association. Fluorescent compositions and low-velocity electron excited fluorescent display devices utilizing the same. 4,275,333, Cl. 313-495.000.
Kajino, Masayori; Yoshii, Takashi; and Tama, Tomeaki, to Kubota, Ltd. Structure for attaching an implement to an offset-type tractor. 4,274,652, Cl. 280-460.00A.
Kajitani, Yukimasa: *See*—
Teshima, Kiyomi; Tsuboi, Toshio; and Kajitani, Yukimasa, 4,274,804, Cl. 415-121.00A.
Kalt, Jorg; and Kehlhofer, Rolf, to BBC Brown Boveri & Company Limited. Turbine power plant with back pressure turbine. 4,274,256, Cl. 60-39.18B.
Kam, John B.: *See*—
Davida, George I.; and Kam, John B., 4,275,265, Cl. 178-22.090.
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, to Mitsubishi Rayon Co., Ltd. Coating composition. 4,274,933, Cl. 204-159.240.

Kamio, Masao: *See*—
Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, 4,274,726, Cl. 354-173.000.
Kamioka, Hajime: *See*—
Takagi, Mikio; Maeda, Mamoru; and Kamioka, Hajime, 4,275,094, Cl. 427-93.000.
Kamody, John F., to Koppers Company, Inc. Sulfur dioxide disposal system. 4,275,044, Cl. 423-242.000.
Kanamoto, Sakumi; and Ishida, Akio, to Maruho Co., Ltd. Surgical clip and its assembly. 4,274,415, Cl. 128-321.000.
Kanda, Takemi: *See*—
Kobayashi, Shigeru; Kanda, Takemi; and Shibuya, Tsunenori, 4,274,816, Cl. 418-93.000.
Kaneda, Reiken, to Kohgiken Corporation. Method for measuring unbalanced wheels of an automotive vehicle. 4,274,287, Cl. 73-457.000.
Kanno, Fukuo: *See*—
Narisawa, Shigeyuki; Yanase, Hiroshi; and Kanno, Fukuo, 4,274,993, Cl. 260-37.00R.
Kano, Ichiro: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, 4,275,306, Cl. 250-548.000.
Kansai Paint Co., Ltd.: *See*—
Nakayama, Hiroyuki; Kato, Akira; and Tsuchiya, Masuo, 4,275,092, Cl. 427-54.100.
Tominaga, Akira; and Nishida, Reijiro, 4,274,989, Cl. 260-29.2TN.
Kantlehner, Jerry R.: *See*—
Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E., 4,274,539, Cl. 206-554.000.
Kanto Denka Kogyo Co., Ltd.: *See*—
Suzuki, Shintaro; Iizuka, Sadao; Moriya, Yoshimi; and Omote, Yuichi, 4,274,865, Cl. 75-0.5AA.
Kao Soap Co., Ltd.: *See*—
Kokubo, Isao; and Kawahara, Yoshiharu, 4,275,012, Cl. 260-421.000.
Kappus, Wolfgang; and Borger, Waldemar, to Varta Batterie Aktiengesellschaft. Galvanic high-temperature cell with solid negative electrode and molten electrolyte. 4,275,129, Cl. 429-112.000.
Karapetian, Vahe. Steam table. 4,274,391, Cl. 126-33.000.
Karjalainen, Arto; and Kurkela, Kauko, to Farmos Group, Ltd. 2,6-Dichlorophenyl-substituted amino-imidazole derivatives and use as hypertensive agents. 4,275,072, Cl. 424-273.00R.
Karl Schmidt GmbH: *See*—
Kelm, Walter; and Landau, Ulrich, 4,274,372, Cl. 123-193.00P.
Kasper, Kenneth R.: *See*—
Stanciu, Virgil V.; Cutler, Robert A.; and Kasper, Kenneth R., 4,274,823, Cl. 425-145.000.
Kasselmann, John T., to Bendix Corporation, The. Disc brake and actuating lever therefor. 4,274,513, Cl. 188-72.700.
Katayama, Hitoshi, to Shimano Industrial Company Limited. Handle stem fixing device for a bicycle and the like. 4,274,301, Cl. 74-551.100.
Kato, Akira: *See*—
Nakayama, Hiroyuki; Kato, Akira; and Tsuchiya, Masuo, 4,275,092, Cl. 427-54.100.
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, to Nihon Tennen Gas Kogyo Co., Ltd. Chitosan-iodine adduct. 4,275,194, Cl. 536-20.000.
Kato, Masataka, to Brother Kogyo Kabushiki Kaisha. Multiple pattern sewing machine. 4,274,348, Cl. 112-158.00E.
Kato, Taizo. Tapping spindle. 4,274,768, Cl. 408-142.000.
Kato, Tatsuo: *See*—
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, 4,275,194, Cl. 536-20.000.
Kato, Tetuo; and Miura, Ieaki, to Tokico, Ltd. Hydraulic shock absorber. 4,274,517, Cl. 188-315.000.
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, to Canon Kabushiki Kaisha. Alignment apparatus. 4,275,306, Cl. 250-548.000.
Kaul, Gunther; Grunert, Wilfried; and Aufenvenne, Wilhelm, to Mollers Maschinenfabrik GmbH. Apparatus for stacking layers of objects. 4,274,780, Cl. 414-64.000.
Kavesh, Sheldon: *See*—
Bedell, John R.; Kavesh, Sheldon; Hemmat, Naim S.; Draizen, Seymour; and Smith, Robert W., 4,274,473, Cl. 164-423.000.
Kawabata, Minoru; Suzuki, Mikio; and Takahashi, Kenji, to Toyoda Koki Kabushiki K.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Power steering device. 4,274,504, Cl. 180-143.000.
Kawada, Shigeki; Kobari, Katsuo; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Abnormality detecting system for DC motor control apparatus. 4,275,342, Cl. 318-490.000.
Kawada, Yoshiharu: *See*—
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, 4,275,194, Cl. 536-20.000.
Kawaguchi, Bunshire, to Ichikin, Ltd., The. Apparatus for improved aftertreatment of textile material by application of microwaves. 4,274,209, Cl. 34-1.000.
Kawahara, Yoshiharu: *See*—
Kokubo, Isao; and Kawahara, Yoshiharu, 4,275,012, Cl. 260-421.000.
Kawakami, James H.; and Kwiatkowski, George T., to Union Carbide Corporation. Oligomer extended polyarylethers. 4,275,186, Cl. 528-174.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Nishikawa, Yoshiyasu, 4,274,810, Cl. 416-186.00R.
Uozumi, Yukio, 4,274,338, Cl. 105-144.000.
Kawasaki Steel Corporation: *See*—
Ohmori, Hisashi, 4,274,622, Cl. 266-227.000.
Keairns, Dale L.: *See*—
Yang, Wen C.; Spangler, Charles E.; Morris, Joe P.; and Keairns, Dale L., 4,275,353, Cl. 324-454.000.
Kefalas A/S: *See*—
Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,275,209, Cl. 546-202.000.
Keglewitsch, Josef; and Vladic, Daniel P., to Bunker Ramo Corporation. Low cost electrical connector. 4,274,700, Cl. 339-192.00R.
Kehlhofer, Rolf: *See*—
Kalt, Jorg; and Kehlhofer, Rolf, 4,274,256, Cl. 60-39.18B.
Keim, Kenneth J., to Du Pont de Nemours, E. I., and Company. Press fit terminal with spring arm contact for edgecard connector. 4,274,699, Cl. 339-176.0MP.
Keith, Charles H.; and Tucker, Richard O., to Celanese Corporation. Filter material. 4,274,914, Cl. 162-109.000.
Keller, Douglas V., Jr.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,274,946, Cl. 209-5.000.
Keller, Russell D. Fuel vent with gravity valve. 4,274,431, Cl. 137-43.000.
Kelley, Fred W., Jr., to General Electric Company. Static var system with means for correcting for negative phase shift. 4,275,346, Cl. 323-210.000.
Kelly, Robert C.; and Wierenga, Wendell, to Upjohn Company, The. Substituted alkoxy carbonyl-3-oxo-α-phthalimido-5-isoxozolidineacetic acids. 4,275,214, Cl. 548-243.000.
Kelm, Edward C.: *See*—
Kurtin, Stephen L.; and Kelm, Edward C., 4,275,267, Cl. 179-1.00J.
Kelm, Walter; and Landau, Ulrich, to Karl Schmidt GmbH. Lightweight piston for internal combustion engines. 4,274,372, Cl. 123-193.00P.
Kemp, Ian: *See*—
Allbert, Barrie J.; French, Tom; Kemp, Ian; and Corner, Michael R., 4,274,465, Cl. 152-379.500.
Kennecott Copper Corporation: *See*—
Lai, Ralph W. M.; and Owen, Edwin L., 4,274,866, Cl. 75-5.000.
Kenney, Clarence E. Speed control system for a windmill. 4,274,807, Cl. 416-48.000.
Kenney Manufacturing Company: *See*—
Comeau, Paul E., 4,274,467, Cl. 160-84.00R.
Kenney, Michael J.: *See*—
French, Tom; Mitchell, William E.; Kenney, Michael J.; and Holmes, Thomas, 4,274,466, Cl. 152-381.300.
Kent, Eric G., to Polysar Limited. Polymeric casts. 4,274,983, Cl. 260-4.00R.
Keramidas, Vassilis G.: *See*—
Cassiday, Daniel R.; Keramidas, Vassilis G.; Roedel, Ronald J.; and Saul, Robert H., 4,275,404, Cl. 357-19.000.
Kerkhoven, Frederik J., to Lever Brothers Company. Production of detergent compositions. 4,274,974, Cl. 252-90.000.
Kern & Co. AG: *See*—
Balmer, Beat, 4,274,736, Cl. 356-5.000.
Kern, Hans, to Siemens Aktiengesellschaft. Circuit arrangement for temperature-dependent voltage regulation of piezo-electric recording nozzles in ink mosaic recording devices. 4,275,402, Cl. 346-140.00R.
Kernforschungsanlage Julich GmbH: *See*—
Schulten, Rudolf; Behr, Friedrich; and Wenzl, Helmut, 4,274,938, Cl. 204-239.000.
Kessler, Gerald. High stiffness cellular plastic siding. 4,274,236, Cl. 52-309.800.
Khera, M. Ibrahim, to GTE Automatic Electric Laboratories Incorporated. Interrupt expander circuit. 4,275,458, Cl. 364-900.000.
Kiemer, Ralph F., to Steelastic Company, The. Die for extruding reinforced fabric. 4,274,821, Cl. 425-114.000.
Kierszтyn, Stanley E.: *See*—
MacKenzie, Burton T., Jr.; Prober, Maurice; and Kierszтyn, Stanley E., 4,274,990, Cl. 260-29.15B.
Kifferstein, Harry P. Disposable adjustable headrest and pillow. 4,274,673, Cl. 297-220.000.
Kikuiri, Makoto; Nakashio, Yoshimi; Arai, Yasue; and Hidaka, Toshio, to Toyo Pulp Co., Ltd. Process for producing alkali pulp. 4,274,913, Cl. 162-65.000.
Kiloking (Proprietary) Limited: *See*—
Henderson, Henning M., 4,275,378, Cl. 340-71.000.
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, to Hercules Incorporated. Yarn structure having main filaments and tie filaments. 4,274,251, Cl. 57-206.000.
Kim, Kwang Y.: *See*—
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.
Kimberly-Clark Corporation: *See*—
Austin, Jared A., 4,274,412, Cl. 128-285.000.
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, to Fuji Electric Co., Ltd. Device for automatically winding a blood pressure measuring cuff. 4,274,424, Cl. 128-686.000.
King, Mary K.: *See*—
Boyd, William J.; and King, Mary K., 4,275,105, Cl. 428-198.000.

King-Seeley Thermos Co.: *See*—
Medeiros, David E.; and Tarozzi, Richard A., 4,274,562, Cl. 222-401.000.

Kinoshita, Hiroo: *See*—
Suzuki, Yoshihiro; Kinoshita, Hiroo; and Akasaka, Naomi, 4,274,981, Cl. 252-438.000.

Kinoshita, Yukuo: *See*—
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, 4,274,424, Cl. 128-686.000.

Kinski, Ernst. Umbrella. 4,274,429, Cl. 135-20.00A.

Kirin Beer Kabushiki Kaisha: *See*—
Abe, Ichiro, 4,274,533, Cl. 198-450.000.

Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. N-Dimethylbenzylacetamide derivatives, and their production and use. 4,274,862, Cl. 71-118.000.

Kirk, Richard L.: *See*—
Alexander, William C.; Kirk, Richard L.; and Thomsen, Kenneth A., 4,275,376, Cl. 340-52.00R.

Kirkpatrick, John W.: *See*—
Hollingsworth, Frank H.; Jenkins, George R.; Kirkpatrick, John W.; and Mower, Lawrence N., 4,274,487, Cl. 166-261.000.

Kirkpatrick, Robert D.; and Weiler, David W., to Union Carbide Corporation. Gas-liquid contacting tray with improved inlet bubbling means. 4,275,021, Cl. 261-114.0JP.

Kish, William C.: *See*—
Cioffi, Paul L.; Downs, William; Kish, William C.; and Newkirk, William E., 4,274,587, Cl. 239-132.300.

Kishi, Atsuo; and Sudo, Toshio, to Hitachi, Ltd. Swash plate type compressor. 4,274,813, Cl. 417-269.000.

Kishi, Hirotoshi: *See*—
Takahashi, Tohru; Sato, Tadashi; and Kishi, Hirotoshi, 4,275,423, Cl. 358-285.000.

Kiss, Gyula: *See*—
Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, 4,274,597, Cl. 239-542.000.

Kita, Nobuyuki; and Narutomi, Yasuhisa, to Fuji Photo Film Co., Ltd.; and National Patent Development Corp. Photosensitive diazonium compound containing composition and article with β-hydroxyalkyl acrylate or methacrylate. 4,275,138, Cl. 430-157.000.

Kiuchi, Mitsuyuki. Apparatus for heating an electrically conductive cooking utensil by magnetic induction. 4,275,281, Cl. 219-10.49R.

Kiwala, Jacob: *See*—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,275,087, Cl. 426-538.000.

Klauke, Erich: *See*—
Naumann, Klaus; Behrenz, Wolfgang; Hammann, Ingeborg; Klauke, Erich; and Marhold, Albrecht, 4,275,250, Cl. 568-812.000.

Klein, Alfons: *See*—
Bohm, Siegfried; Klein, Alfons; and Wedemeyer, Karlfried, 4,275,241, Cl. 568-426.000.

Klein, Edgar: *See*—
Waldman, Joseph L.; Klein, Edgar; Kulling, Achim; and Rahm, Joseph A., 4,275,041, Cl. 423-82.000.

Kleinschmidt, Peter: *See*—
Heywang, Walter; Guntersdorfer, Max; and Kleinschmidt, Peter, 4,275,390, Cl. 340-554.000.

Kleinschmit, Peter: *See*—
Voigt, Carl; and Kleinschmit, Peter, 4,275,049, Cl. 423-352.000.

Klimowicz, Michael A.: *See*—
Koch, William E., Jr.; and Klimowicz, Michael A., 4,274,257, Cl. 60-431.000.

Klimpel, Richard R.: *See*—
Manfroy, Willy; and Klimpel, Richard R., 4,274,599, Cl. 241-16.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Kupper, Heinz; and Busch, Helmut, 4,274,375, Cl. 123-263.000.

Klooster, Alex, Jr., to Environmental Research Institute of Michigan. Optical system phase error compensator. 4,275,454, Cl. 364-861.000.

Kloth, Hans-Jochen: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.

Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., to Miles Laboratories, Inc. 15-Deoxy-16-hydroxy prostaglandins. 4,275,224, Cl. 560-116.000.

Kluss, Hans; and Lampic, Janez, to Volkswagenwerk AG; and Peguform-Werke GmbH. Protective band, in particular a bumper cover for automobiles. 4,274,668, Cl. 293-142.000.

Knapp, William K., to RCA Corporation. Resettable bistable circuit. 4,275,316, Cl. 307-279.000.

Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., to Revell, Incorporated. Model with two-pole motor actuated siren and flashing lights. 4,274,225, Cl. 46-227.000.

Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Electrophotographic method for reproducing a multicolor image. 4,275,134, Cl. 430-44.000.

Knight, Donald P.: *See*—
Farmer, Felta C., Jr.; and Knight, Donald P., 4,275,347, Cl. 323-312.000.

Knoble, David W.; and Crane, Thomas A., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 4,275,337, Cl. 315-289.000.

Kobari, Katsuo: *See*—
Kawada, Shigeki; Kobari, Katsuo; and Ishida, Hiroshi, 4,275,342, Cl. 318-490.000.

Kobayashi, Kouji: *See*—
Moroto, Shuzo; and Kobayashi, Kouji, 4,274,519, Cl. 192-3.280.

Kobayashi, Shigeru; Kanda, Takemi; and Shibuya, Tsunenori, to Diesel Kiki Company, Ltd. Rotary vane compressor with chamfered vane slots. 4,274,816, Cl. 418-93.000.

Kobayashi, Tadashi: *See*—
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, 4,275,240, Cl. 568-37.000.

Kobayashi, Yasuo: *See*—
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, 4,275,093, Cl. 427-89.000.

Koch, Robert O.: *See*—
Tsiang, Chong L.; and Koch, Robert O., 4,274,376, Cl. 123-360.000.

Koch, William E., Jr.; and Klimowicz, Michael A., to Eaton Corporation. Anti-stall controller. 4,274,257, Cl. 60-431.000.

Kochs Adler AG: *See*—
Schneider, Gerhard; Ludwig, Rolf; and Fischer. Jochen, 4,274,345, Cl. 112-51.000.

Kochwa, Shaul: *See*—
Rosenfield, Richard E.; and Kochwa, Shaul, 4,275,053, Cl. 424-12.000.

Kocks Technik GmbH & Co.: *See*—
Zacharias, Theodor; and Terdenge, Bernhard, 4,274,274, Cl. 72-239.000.

Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Self-contained type lash adjuster. 4,274,370, Cl. 123-90.550.

Kodama, Yujiro; Kuroishi, Nobuhito; Sabao, Masato; and Kureha, Yasumasa, to Sumitomo Electric Industries, Ltd. Sintered hard metals having high wear resistance. 4,274,876, Cl. 75-243.000.

Koerner, Gotz; and Fink, Hans-Ferdi, to Th. Goldschmidt AG. Defoamer preparation and processes for its production. 4,274,977, Cl. 252-358.000.

Kohgiken Corporation: *See*—
Kaneda, Reiken, 4,274,287, Cl. 73-457.000.

Kohno, Tohru: *See*—
Obara, Kunio; Kohno, Tohru; and Sawaguchi, Hiroshi, 4,274,874, Cl. 75-231.000.

Kohtani, Yutaka; and Komine, Yoshio, to Canon Kabushiki Kaisha. Sound motion picture camera. 4,274,718, Cl. 352-14.000.

Kojima, Tamotsu; Fujiwhara, Mitsuto; Endo, Takaya; and Iijima, Akio, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic materials. 4,275,148, Cl. 430-558.000.

Kokkinos, Angelos, to Combustion Engineering, Inc. Low load coal nozzle. 4,274,343, Cl. 110-263.000.

Kokubo, Isao; and Kawahara, Yoshiharu, to Kao Soap Co., Ltd. Process for continuous refining of oils and fats. 4,275,012, Cl. 260-421.000.

Kolb, Fritz; Fehlisch, Silvan; Ziegert, Otto; Bender, Hans; and Schmitt, Manfred, to Bayer Aktiengesellschaft. Control valve having a disc shaped throttle. 4,274,439, Cl. 137-601.000.

Koller, Joseph A. Skimmer having a wide drive roller, a guide means, and a tension means. 4,274,957, Cl. 210-172.000.

Komatsu, Koziro: *See*—
Mabuchi, Kenichi; and Komatsu, Koziro, 4,275,394, Cl. 340-694.000.

Komine, Yoshio: *See*—
Kohtani, Yutaka; and Komine, Yoshio, 4,274,718, Cl. 352-14.000.

Konang, Peter: *See*—
Krick, Gerd; Konang, Peter; Sigdell, Jan-Erik; and Heilmann, Klaus, 4,274,964, Cl. 210-321.300.

Kondo, Kunio: *See*—
Haga, Minoru; and Kondo, Kunio, 4,274,774, Cl. 409-232.000.

Kondracki, Witold, to Manhattan Protection, Inc. Window gate construction. 4,274,228, Cl. 49-56.000.

Konig, Horst: *See*—
Bardenheuer, Friedrich; Konig, Horst; Junker, Alois; and Rath, Gero, 4,274,867, Cl. 75-13.000.

Konig, Wolfgang; Teetz, Volker; Jager, Georg; and Geiger, Rolf, to Hoechst Aktiengesellschaft. Process for the manufacture of LH-RH and LH-RH analogs using Glu-His(DnP)-OH. 4,275,001, Cl. 260-112.5LH.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kojima, Tamotsu; Fujiwhara, Mitsuto; Endo, Takaya; and Iijima, Akio, 4,275,148, Cl. 430-558.000.
Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, 4,274,726, Cl. 354-173.000.

Koolatron Industries, Limited: *See*—
Reed, Michael A.; Hatcher, Ian; Reed, Kingstone L. H.; and Danchuk, William, 4,274,262, Cl. 62-3.000.

Kooriyama, Tsutomu: *See*—
Fukumori, Yukitsugu; Sone, Masazumi; Nagae, Hiromitsu; Shida, Masami; Kooriyama, Tsutomu; and Harada, Koji, 4,274,695, Cl. 339-97.00S.

Kopas, George A.; and Boomer, Merton E. Purification of vegetable oil. 4,275,089, Cl. 426-601.000.

Koppel, Albert W.: *See*—
Sudar, Robert B.; Lewis, Edward L.; and Koppel, Albert W., 4,275,352, Cl. 324-449.000.

Koppers Company, Inc.: *See*—
Greco, Nicholas P., 4,275,246, Cl. 568-750.000.

Kamody, John F., 4,275,044, Cl. 423-242.000.
Koss Corporation: *See*—
Kurtin, Stephen L.; and Kelm, Edward C., 4,275,267, Cl. 179-1.00J.
Kotick, Michael P.; and Leland, David L., to Miles Laboratories, Inc. 7,7-Ditosyloxymethyl-4,5α-epoxy-morphinan-6-ols. 4,275,205, Cl. 546-44.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Jung, Wilfried; and Rau, Peter, 4,274,921, Cl. 176-78.000.
Queiser, Horst; and Meichsner, Othmar, 4,274,962, Cl. 210-257.100.
Kratschmer, Horst D., to Kurz, Leonhard. Metallized hot stamping foil for decorating three-dimensional objects. 4,275,116, Cl. 428-336.000.
Krause, Peter: *See*—
Lutz, Dieter; Krause, Peter; Terveen, Axel; and Eibl, Volker, 4,274,425, Cl. 128-719.000.
Kraw, Stanley P., Jr. Vacuum responsive carburetor linkage. 4,274,377, Cl. 123-396.000.
Kreidler, Manfred: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.
Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Polyfluoroallyloxy compounds, their preparation and copolymers therefrom. 4,275,225, Cl. 560-174.000.
Kretschmar, Bernd: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.
Krick, Gerd; Konang, Peter; Sigdell, Jan-Erik; and Heilmann, Klaus, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Dialysator. 4,274,964, Cl. 210-321.300.
Krings, Josef. Excavating sheeting unit. 4,274,763, Cl. 405-282.000.
Kristiansen, Jan O.; and Lynham, C. Richard, to Foseco International Limited. Desulphurization of metals. 4,274,869, Cl. 75-53.000.
Krobock, John J.: *See*—
Dueweke, Gilbert R.; and Krobock, John J., 4,274,458, Cl. 144-193.00D.
Kroneld, Erik G.; and Andersson, Per-Erik, to Obbola Linerboard Aktiebolag. Method of cooking cellulose material and preserving the heat and terpentine content of the cooking liquor. 4,274,911, Cl. 162-15.000.
Kronman, Albert F.: *See*—
Peters, Melville F.; and Peters, Walter T., 4,274,396, Cl. 126-438.000.
Krueger, Hans, to Siemens Aktiengesellschaft. Device with a scatter-free light valve. 4,274,713, Cl. 350-347.00R.
Krueger, William R.: *See*—
Cavil, David T.; and Krueger, William R., 4,275,322, Cl. 310-111.000.
Krumme, Jens-Peter: *See*—
Schmelzer, Christoph; Spohr, Reimar; Krumme, Jens-Peter; Witter, Klaus; and Heitmann, Heinrich, 4,274,935, Cl. 204-192.00M.
Kubo, Yoshiro: *See*—
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, 4,274,424, Cl. 128-686.000.
Kubomura, Kiyoshi: *See*—
Tanaka, Takehiko; Kubota, Yoji; and Kubomura, Kiyoshi, 4,275,456, Cl. 364-900.000.
Kubota, Ltd.: *See*—
Kajino, Masayori; Yoshii, Takashi; and Tama, Tomeaki, 4,274,652, Cl. 280-460.00A.
Kubota, Tadashi: *See*—
Watanabe, Takeo; Kubota, Tadashi; and Yamagami, Akio, 4,275,425, Cl. 360-92.000.
Kubota, Yoji: *See*—
Tanaka, Takehiko; Kubota, Yoji; and Kubomura, Kiyoshi, 4,275,456, Cl. 364-900.000.
Kuboyama, Morio: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.
Kuehn, Lorne A.: *See*—
Pogorski, Louis A.; and Kuehn, Lorne A., 4,274,158, Cl. 2-2.10R.
Kuhnle, Ernst, to Bizerba-Werke Wilhelm Kraut KG. Electrically price-calculating balance. 4,274,500, Cl. 177-25.000.
Kuhnlein, Hans L.: *See*—
Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, 4,274,910, Cl. 159-1.00C.
Kulesza, Ralph J.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Game apparatus using visual/motor skills. 4,274,630, Cl. 273-1.00R.
Kulig, Francis V., to Federal Paper Board Company, Inc. Cellular tray-type carton. 4,274,579, Cl. 229-28.00R.
Kulling, Achim: *See*—
Waldman, Joseph L.; Klein, Edgar; Kulling, Achim; and Rahm, Joseph A., 4,275,041, Cl. 423-82.000.
Kumai, Seisaku: *See*—
Yamabe, Masaaki; Kumai, Seisaku; and Munekata, Seiji, 4,275,226, Cl. 560-183.000.
Kumazawa, Satoru: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Ohtsuru, Masashi; and Yamazaki, Shiro, 4,275,078, Cl. 424-324.000.
Kung, Hans R.: *See*—
Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, 4,274,910, Cl. 159-1.00C.
Kupper, Heinz; and Busch, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Piston, especially for internal combustion engines. 4,274,375, Cl. 123-263.000.
Kuraray Co., Ltd.: *See*—
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Ohtsuru, Masashi; and Yamazaki, Shiro, 4,275,078, Cl. 424-324.000.
Takahashi, Masaaki; and Ito, Akira, 4,275,253, Cl. 585-7.000.
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katsumi, 4,275,178, Cl. 525-71.000.
Kureha, Yasumasa: *See*—
Kodama, Yujiro; Kuroishi, Nobuhito; Sabao, Masato; and Kureha, Yasumasa, 4,274,876, Cl. 75-243.000.
Kuriki, Choei: *See*—
Yamada, Hisafumi; Tokuhara, Masaharu; and Kuriki, Choei, 4,275,420, Cl. 358-167.000.
Kurkela, Kauko: *See*—
Karjalainen, Arto; and Kurkela, Kauko, 4,275,072, Cl. 424-273.00R.
Kurkela, Matti; Lahtinen, Leo; and Ylivakeri, Raimo, to Valmet. Flow apparatus for work vehicles. 4,274,212, Cl. 37-29.000.
Kuroda, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Sunshade system in sliding roof system of vehicle. 4,274,672, Cl. 296-216.000.
Kuroishi, Nobuhito: *See*—
Kodama, Yujiro; Kuroishi, Nobuhito; Sabao, Masato; and Kureha, Yasumasa, 4,274,876, Cl. 75-243.000.
Kurokawa, Mitsuo: *See*—
Hosaka, Yoshihiro; Harita, Yoshiyuki; Kurokawa, Mitsuo; Harada, Kunihiro; and Tagami, Eijiro, 4,275,142, Cl. 430-271.000.
Kurono, Masayasu; Nakai, Hisao; and Sakuyama, Shigeru, to ONO Pharmaceutical Co. Ltd. 15-cylobutyl-trans-Δ^2-prostaglandin analogues. 4,275,075, Cl. 424-305.000.
Kurosaki, Syozi: *See*—
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.
Kurtin, Stephen L.; and Kelm, Edward C., to Koss Corporation. Ambience processor. 4,275,267, Cl. 179-1.00J.
Kurtz, Robert J.: *See*—
Findl, Eugene; and Kurtz, Robert J., 4,274,937, Cl. 204-195.00R.
Kurz, Leonhard: *See*—
Kratschmer, Horst D., 4,275,116, Cl. 428-336.000.
Kushi, Kenji: *See*—
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,274,933, Cl. 204-159.240.
Kutelis, Carl R.: *See*—
Roy, Donald A.; O'Keefe, George F.; and Kutelis, Carl R., 4,274,316, Cl. 83-23.000.
Kuwata, Ryuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Process control system. 4,275,439, Cl. 364-120.000.
Kuyper, Herman S.; Evers, Robert S.; and Regal, John, to Rolscreen Company. Operator for a slat shade assembly. 4,274,469, Cl. 160-107.000.
Kuzma, Peter. Hydrophilic polymers and contact lenses therefrom. 4,275,183, Cl. 526-303.000.
Kwiatkowski, George T.: *See*—
Kawakami, James H.; and Kwiatkowski, George T., 4,275,186, Cl. 528-174.000.
Kyokuto Fatty-Acid Corporation: *See*—
Itoh, Shuji; and Yoshida, Yoji, 4,274,905, Cl. 156-462.000.
Kyowa Gas Chemical Industry Co., Ltd.: *See*—
Tadokoro, Shin-ichi; and Segawa, Hirozo, 4,275,174, Cl. 525-1.000.
Lachenmayer, Wilhelm: *See*—
Harmsen, Lothar; Bick, Klaus; Lachenmayer, Wilhelm; Vennmann, Friedhelm; and Zieschang, Jurgen, 4,275,258, Cl. 13-32.000.
La Coste, Bernard L., to Westinghouse Electric Corp. Method of diagnostic valve testing. 4,274,438, Cl. 137-551.000.
LaFrance Corporation: *See*—
Peroni, Peter A., 4,274,545, Cl. 220-4.00R
Lafreniere, Earl W.; and Jack, Douglas S. Carrier for skis and ski poles. 4,274,571, Cl. 294-147.000.
La Gro, Phillip A., to Hollister Incorporated. Gas-venting filter for collection appliance. 4,274,848, Cl. 55-387.000.
Lahtinen, Leo: *See*—
Kurkela, Matti; Lahtinen, Leo; and Ylivakeri, Raimo, 4,274,212, Cl. 37-29.000.
Lai, Ralph W. M.; and Owen, Edwin L., to Kennecott Copper Corporation. Flotation and sintering of synthetic manganese carbonate. 4,274,866, Cl. 75-5.000.
Lake, Robert J.; and Chapman, Kimberly L., to Clow Corporation. Polymer dispersion device. 4,274,749, Cl. 366-132.000.
Lamber, Clarence F.: *See*—
Passafiume, Anthony; Lamber, Clarence F.; and Dickover, William, 4,274,318, Cl. 83-177.000.
Lamberti, Vincent: *See*—
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,275,007, Cl. 260-343.900.
Lampic, Janez: *See*—
Kluss, Hans; and Lampic, Janez, 4,274,668, Cl. 293-142.000.

Lampton, Glen T., to United States of America, Navy. Deepwater target-seeking mines. 4,274,333, Cl. 102-418.000.

Lancer Boss Limited: *See*—
Taylor, Robert A., 4,274,795, Cl. 414-673.000.

Landau, Ulrich: *See*—
Kelm, Walter; and Landau, Ulrich, 4,274,372, Cl. 123-193.00P.

Lane, Martyn S.: *See*—
Cadle, Terence M.; and Lane, Martyn S., 4,274,875, Cl. 75-232.000.

Lange, Gerd, to Schlaap-Mobel GmbH & Co., KG. Fixed joint, especially for joining structural parts of wooden furniture. 4,274,756, Cl. 403-382.000.

Langen, Marinus J. M.; and Strauss, Edgar H., to H. J. Langen & Sons Ltd. Checkout counter. 4,274,245, Cl. 53-558.000.

Langenhorst, Gunter, to top-element Bauelemente fur Irnenausbau & Raumgestaltung GmbH & Co. KG. Window-frame assembly. 4,274,235, Cl. 52-213.000.

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Lasar, Theodore. Device to control machines by voice. 4,275,266, Cl. 179-1.0VC.

Lassen, Niels; Bogeso, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., to Kefalas A/S. Xanthene and thioxanthene derivatives. 4,275,209, Cl. 546-202.000.

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Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,275,200, Cl. 544-137.000.

Laudenslager, James B.: *See*—
United States of America, National Aeronautics and Space Administration; Laudenslager, James B.; and Pacala, Thomas J., 4,275,317, Cl. 307-415.000.

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Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,275,101, Cl. 369-286.000.

Lawson, Alexander E.; Mathieu, Robert J.; and Miller, James M., to GOW-MAC Instrument Co. Short optical path detector. 4,275,304, Cl. 250-373.000.

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Lear Siegler, Inc.: *See*—
Bistrick, Eugene J.; and Abrahamsson, Axel B., 4,274,767, Cl. 407-18.000.

Leas, Arnold M. Process for gasification of coal and organic solid wastes. 4,274,839, Cl. 48-202.000.

Leather, Russell A., to Ferranti Limited. Electrical connector having a plurality of in-line contacts. 4,274,694, Cl. 339-74.00R.

Lebailly, Jacques, to U.S. Philips Corporation. Electro-luminescent semiconductor device. 4,275,403, Cl. 357-17.000.

Le Can, Claude J. P. F.: *See*—
Michel, Jean P.; Le Can, Claude J. P. F.; and van Buul, Marinus C. W., 4,275,386, Cl. 340-347.0AD.

Lechler, Rolf; and Leitermann, Wulf, to Audi Nsu Auto Union Aktiengesellschaft. Rotary combustion engine of trochoid design with oil return groove. 4,274,815, Cl. 418-91.000.

Leco Corporation: *See*—
Vallance, Charles B., 4,275,375, Cl. 338-329.000.

Lecoq, Jean-Claude; and Grimaud, Edouard, to Produits Chimiques Ugine Kuhlmann. Process for treating waste water from propylene oxidation plants. 4,274,969, Cl. 210-721.000.

Le Couteur, George M. Telecine machines. 4,275,422, Cl. 358-214.000.

LecTec Corporation: *See*—
Hymes, Alan C., 4,274,420, Cl. 128-641.000.

Le Dall, Guy, to Permo. Electronic means for controlling the regeneration of resins in a resin type ion exchange device. 4,275,448, Cl. 364-500.000.

Lederman, Frederick E., to General Motors Corporation. Resilient mount for MacPherson strut. 4,274,655, Cl. 280-688.000.

Lee, Choong G. Air-cooled rotary internal combustion engine. 4,274,374, Cl. 123-241.000.

Lee, Peter F., to Southland Instruments, Inc. Aseptic fluid transfer. 4,274,453, Cl. 141-1.000.

Leeds & Northrup Company: *See*—
Hance, Richard J., 4,274,284, Cl. 73-354.000.

Lefort, Marcel: *See*—
Bargain, Michel; and Lefort, Marcel, 4,275,184, Cl. 528-26.000.

Lehureau, Jean-Claude, to Thomson-CSF. Multitrack magnetic reading head. 4,275,428, Cl. 360-113.000.

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Bricot, Claude; and Lehureau, Jean Claude, 4,275,275, Cl. 369-44.000.

Leibinger, Berthold: *See*—
Herb, Eugen; and Leibinger, Berthold, 4,274,801, Cl. 414-751.000.

Leigh, George C.: *See*—
Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., 4,274,530, Cl. 198-347.000.

Leighou, Robert O.; and Meeks, Leighton A., to Martin Marietta Corporation. Apparatus and method for receiving digital data at a first rate and outputting the data at a different rate. 4,275,457, Cl. 364-900.000.

Leitermann, Wulf: *See*—
Lechler, Rolf; and Leitermann, Wulf, 4,274,815, Cl. 418-91.000.

Leland, David L.: *See*—
Kotick, Michael P.; and Leland, David L., 4,275,205, Cl. 546-44.000.

Lemmer, Alfred. Assembly table for conductor boards. 4,274,196, Cl. 29-741.000.

Lemoussu, Michel, to Compagnie Industrielle des Telecommunicators Cit-Alcatel. Clock rate recovery circuit. 4,275,465, Cl. 375-97.000.

Lenders, Wilhelmus L. L.; and van Hirtum, Martinus J., to U.S. Philips Corporation. Machine for winding wire coils. 4,274,603, Cl. 242-7.140.

Lendvay, Andrew T., to Philip Morris Incorporated. Method of increasing filling power of tobacco products. 4,274,427, Cl. 131-293.000.

Lenker, Paul E. Method of manufacture of certain hand wrenches and the like. 4,274,309, Cl. 76-114.000.

Lenox Machine Company, Inc.: *See*—
Frye, Kenneth G.; and Fitzpatrick, Donald C., 4,274,319, Cl. 83-430.000.

Leonhardt, Maria R. Apparatus for electrical feed of a heater in a crystal-growing vessel. 4,275,035, Cl. 422-250.000.

Leseur, Andre: *See*—
Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, 4,275,045, Cl. 423-249.000.

Leslie Metal Arts Company: *See*—
Vander Ley, Robert J.; and Sherman, Frederick G., 4,274,689, Cl. 312-333.000.

Lestradet, Maurice C. J. Control apparatus for agricultural sprayers having a mixing chamber. 4,274,585, Cl. 239-124.000.

Lever Brothers Company: *See*—
Coleman, Michael H.; and Macrae, Alasdair R., 4,275,081, Cl. 426-33.000.
Gutierrez, Eddie N.; and Lamberti, Vincent, 4,275,007, Cl. 260-343.900.
Kerkhoven, Frederik J., 4,274,974, Cl. 252-90.000.
Tokosh, Richard; Barillo, Joseph; and Urban, Warren, 4,275,013, Cl. 260-504.00R.

Lever, Gordon, to Alcan Research and Development Limited. Removal of oxalate from Bayer process liquor. 4,275,042, Cl. 423-130.000.

Levine, Sidney: *See*—
Foss, Rene N.; and Levine, Sidney, 4,274,353, Cl. 114-21.00A.

Levy, Yves: *See*—
Imbert, Christian; Levy, Yves; and Loulergue, Jean-Claude, 4,275,302, Cl. 250-330.000.

Lewis, Edward L.: *See*—
Sudar, Robert B.; Lewis, Edward L.; and Koppel, Albert W., 4,275,352, Cl. 324-449.000.

Li, Pei-Ching, to International Business Machines Corporation. Phosphorus-nitrogen-oxygen composition and method for making such composition and applications of the same. 4,275,409, Cl. 357-54.000.

Light, Bette M.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,275,080, Cl. 426-3.000.

Lightolier Incorporated: *See*—
Chan, Kingsley; and Russo, Neil, 4,274,615, Cl. 248-343.000.

Lilburn, Jennifer E., to Chevron Research Company. Deposit control additives and fuel compositions containing them. 4,274,837, Cl. 44-63.000.

Liljekvist, Bernt S.; and Persson, Anders E., to Sandvik Aktiebolag. Method and device in earth cutting. 4,274,496, Cl. 175-57.000.

Lindal, S. Walter. Metal reinforced wood truss and tie means. 4,274,241, Cl. 52-642.000.

Lindau, Leif A. V., to AB Svenska Flaktfabriken. Method of purifying gas containing gaseous mercury. 4,274,842, Cl. 55-72.000.

Linde Aktiengesellschaft: *See*—
Becker, Hans, 4,274,850, Cl. 62-24.000.

Lingl Corporation: *See*—
Denison, Don E., 4,275,029, Cl. 264-152.000.

Linton, Derek; and Boydell, John M., to Pauling and Company Limited. Building systems. 4,274,242, Cl. 52-741.000.

Lippel, Bernard. Dither-quantized signalling for color television. 4,275,411, Cl. 358-13.000.

Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, to U.S. Philips Corporation. Method of duplicating plastics information carriers. 4,275,091, Cl. 427-53.100.

Lippmann, Peter. Process and arrangement for the covering of a spinning carrier with fiber material. 4,274,250, Cl. 57-5.000.

Litman, David J.; Harel, Zvi; and Ullman, Edwin F., to Syva Company. Macromolecular environment control in specific receptor assays. 4,275,149, Cl. 435-7.000.

Littler, Brian J. Crash helmet collar. 4,274,161, Cl. 2-413.000.

Litton Industrial Products, Inc.: *See*—
Engle, Gary L., 4,275,415, Cl. 358-140.000.

Liu, Chia-Seng: *See*—
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,274,251, Cl. 57-206.000.

Liu, Paul S.: *See*—
Marquez, Victor E.; Liu, Paul S.; and Driscoll, John S., 4,275,057, Cl. 424-180.000.
Livesay, Richard E., to Caterpillar Tractor Co. Self-lapping seal for track chain. 4,274,682, Cl. 305-11.000.
Lo, Alex: *See*—
Joy, Michael; Moon, Richard E.; Quashem, Abul; Lo, Alex; and Dayal, Vijay S., 4,274,162, Cl. 3-1.300.
Login, Robert B., to BASF Wyandotte Corporation. Graft polyesters and sized textiles. 4,275,176, Cl. 525-48.000.
Long, Richard W.; and Stinton, Robert T., to Diving Unlimited International, Inc. Non-return hot water diving suit. 4,274,759, Cl. 405-186.000.
Long, Virgil L., Sr.: *See*—
Grosser, Richard W.; and Long, Virgil L., Sr., 4,274,626, Cl. 272-109.000.
Long, William B.; and Zimmerman, John A., Jr., to AMP Incorporated. Electrical connecting device for wiring systems. 4,274,696, Cl. 339-103.00R.
Longardner, Robert L.: *See*—
Summers, William A.; and Longardner, Robert L., 4,275,310, Cl. 290-1.00R.
Longinotti, Enrico. Handling plant for cement tiles or the like with the aid of trays upon which the tiles are placed for seasoning. 4,274,779, Cl. 414-32.000.
Lord, Herbert A., to Western Electric Company, Inc. Uniformly cooled plasma etching electrode. 4,275,289, Cl. 219-121.0PR.
L'Oreal: *See*—
Bouillon, Claude; and Rosenbaum, Georges, 4,275,199, Cl. 542-430.000.
Sebag, Henri; Zysman, Alexandre; and Vanlerberghe, Guy, 4,275,054, Cl. 424-65.000.
Lorenz, Peter R.; Weinmann, Ernst; and Majer, Mirko, to Hoechst Aktiengesellschaft. Process for isolating hepatitis A-virus. 4,275,165, Cl. 435-235.000.
Lorenze, Robert V., Jr., to Honeywell Inc. Durable insulating protective layer for hybrid CCD/mosaic IR detector array. 4,275,407, Cl. 357-30.000.
Louie, Anthony C. H.; and Young, Stephen H., to United States of America, Navy. LCD controller. 4,275,421, Cl. 358-183.000.
Loulergue, Jean-Claude: *See*—
Imbert, Christian; Levy, Yves; and Loulergue, Jean-Claude, 4,275,302, Cl. 250-330.000.
Love, Robert B., to Advanced Coating Technology, Inc. Vacuum deposition system and method. 4,274,936, Cl. 204-192.00R.
Lovell, Roger. Corrosion protection structure. 4,275,111, Cl. 428-306.000.
Lu, Robert T., to ICI Americas Inc. Polyimides of bismaleimides and activated methylene compounds. 4,275,185, Cl. 528-170.000.
Luaces, Roman Y., to TEC Foam S.A. Process and apparatus for elimination of densified areas in blocks of pliable polyurethane foam. 4,275,024, Cl. 264-51.000.
Lube, Robert R.: *See*—
Gallanis, George P.; Spohr, Albert R.; and Lube, Robert R., 4,274,199, Cl. 30-34.100.
Lucas Industries Limited: *See*—
Hibell, Ernest G., 4,275,389, Cl. 340-388.000.
Lucier, Robert E. System for converting solar heat to electrical energy. 4,275,309, Cl. 290-1.00R.
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., to Masonite Corporation. Post-press molding of man-made boards to produce contoured furniture parts. 4,275,027, Cl. 264-118.000.
Ludwig, Rolf: *See*—
Schneider, Gerhard; Ludwig, Rolf; and Fischer, Jochen, 4,274,345, Cl. 112-51.000.
Lumbeck, Gerd; and Ferch, Horst, to Deutsche Gold- und Silber Scheideanstalt vormals Roessler. Aqueous dispersion of a hydrophobic silica. 4,274,883, Cl. 106-308.00Q.
Lummer, Richard: *See*—
Bernhardt, Dieter; Dautzenberg, Norbert; Lummer, Richard; and Huber, Georg, 4,274,864, Cl. 75-0.50R.
Lund, Raymond R., to Canron Corporation. Machine for changing rails. 4,274,334, Cl. 104-2.000.
Lundberg, Lars: *See*—
Bernwall, Hans; Lundberg, Lars; and Seipel, Carl, 4,274,606, Cl. 242-117.000.
Lundgren, Rolf B.: *See*—
Svensson, Claes G. S.; Eriksson, Hans E. K.; and Lundgren, Rolf B., 4,274,786, Cl. 414-218.000.
Lustig, Claude D., to Sperry Corporation. Passive ring laser rate of turn devices. 4,274,742, Cl. 356-350.000.
Lutz, Dieter; Krause, Peter; Terveen, Axel; and Eibl, Volker, to Sachs-Systemtechnik GMbH. Mouthpiece for a redox gas measuring device. 4,274,425, Cl. 128-719.000.
Lutz, Friedrich: *See*—
Freisler, Erhard; Lutz, Friedrich; and Zollinger, Hans, 4,274,449, Cl. 139-449.000.
Lynes, Dennis J.: *See*—
Boll, Harry J.; and Lynes, Dennis J., 4,275,437, Cl. 363-60.000.
Lynham, C. Richard: *See*—
Kristiansen, Jan O.; and Lynham, C. Richard, 4,274,869, Cl. 75-53.000.
Lynn, Shirley Y.: *See*—
McCollough, George T.; Esders, Theodore W.; and Lynn, Shirley Y., 4,275,166, Cl. 435-227.000.
Maag Gear-Wheel & Machine Co. Ltd.: *See*—
Sigg, Hans, 4,274,523, Cl. 192-21.000.
Maas, Joachim: *See*—
Forter, Hansruedi; Groening, Jurgen; Kuhnlein, Hans L.; Kung, Hans R.; Maas, Joachim; and Schultz, Karl-Heinz, 4,274,910, Cl. 159-1.00C.
Mabuchi, Kenichi; and Komatsu, Koziro, to Mabuchi Motor Co. Ltd. Radio control driving circuit device. 4,275,394, Cl. 340-694.000.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Kenichi; and Komatsu, Koziro, 4,275,394, Cl. 340-694.000.
MacDonald, Russell J., to Ionics Inc. Synthesis of water soluble cross-linkers and their use in the manufacture of anionic polymers. 4,275,227, Cl. 560-222.000.
MacDuff, Richard: *See*—
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,274,251, Cl. 57-206.000.
MacKenzie, Burton T., Jr.; Prober, Maurice; and Kiersztyn, Stanley E. Dielectric insulating polyolefin compositions containing nitrile polysiloxane fluid, and conductor products insulated therewith. 4,274,990, Cl. 260-29.15B.
Mackey, E. Scudder; and Pechmann, Karl, to GAF Corporation. Antistatic photographic element. 4,275,147, Cl. 430-527.000.
Mackintosh, Charles. Power operated wheelchair. 4,274,503, Cl. 180-23.000.
Mackowiak, David E.: *See*—
Imai, Tamotsu; Homeier, Edwin H.; and Mackowiak, David E., 4,275,252, Cl. 568-909.000.
Macrae, Alasdair R.: *See*—
Coleman, Michael H.; and Macrae, Alasdair R., 4,275,081, Cl. 426-33.000.
Madison, Bryan L.: *See*—
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,274,975, Cl. 252-140.000.
Madison-Kipp Corporation: *See*—
Thomson, Ronald E.; and Dombroski, Robert M., 4,274,509, Cl. 184-15.00B.
Maeda, Mamoru: *See*—
Takagi, Mikio; Maeda, Mamoru; and Kamioka, Hajime, 4,275,094, Cl. 427-93.000.
Maeda, Toshiyuki: *See*—
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,274,817, Cl. 418-133.000.
Maeding, Dale; and Pines, Michael Y., to Hughes Aircraft Company. Charge summing filter aperture corrector. 4,275,315, Cl. 307-221.00D.
Magistretti, Maria J.: *See*—
Nardi, Dante; Tajano, Alberto; and Magistretti, Maria J., 4,275,071, Cl. 424-273.00R.
Magnesium Elektron Inc.: *See*—
Sherif, Sherif A.; and Hachtmann, James E., 4,274,972, Cl. 252-8.600.
Mahar, Kevin D., to Republic Steel Corporation; and Hanna Furnace Corporation, The. Air pollution control method and apparatus for the extrusion and quenching of coke. 4,274,923, Cl. 201-39.000.
Mahle GmbH: *See*—
Bassler, Wolfgang, 4,274,925, Cl. 204-26.000.
Mailey, Everett A.: *See*—
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Majer, Mirko: *See*—
Lorenz, Peter R.; Weinmann, Ernst; and Majer, Mirko, 4,275,165, Cl. 435-235.000.
Makosch, Gunter; Schedewie, Franz; Schmackpfeffer, Arno; and Ziller, Jorg, to International Business Machines Corporation. Apparatus for machining material. 4,275,288, Cl. 219-121.0LR.
Malcom, Lawrence L.; and Convery, F. Richard, to University of California, The Regents of the. Prosthetic fixation technique. 4,274,163, Cl. 3-1.910.
Mallatt, Russell C.: *See*—
Grutsch, James F.; Mallatt, Russell C.; and Walk, Joe D., 4,274,968, Cl. 210-666.000.
Malpas, Charles H. Packaging of liquids. 4,274,554, Cl. 222-107.000.
Malstrom, Jerry A.: *See*—
Dale, Eugene M.; and Malstrom, Jerry A., 4,274,838, Cl. 48-111.000.
Manfroy, Willy; and Klimpel, Richard R., to Dow Chemical Company, The. Ore grinding process including a grinding aid of an anionic polyelectrolyte. 4,274,599, Cl. 241-16.000.
Manhattan Protection, Inc.: *See*—
Kondracki, Witold, 4,274,228, Cl. 49-56.000.
Mannesmann Aktiengesellschaft: *See*—
Bardenheuer, Friedrich; Konig, Horst; Junker, Alois; and Rath, Gero, 4,274,867, Cl. 75-13.000.
Bernhardt, Dieter; Dautzenberg, Norbert; Lummer, Richard; and Huber, Georg, 4,274,864, Cl. 75-0.50R.
Mansell, Peter B.: *See*—
Pugh, William A. G.; Edmunds, Robert I.; Mansell, Peter B.; Brechin, Robert; and Langton, Hubert A., 4,274,224, Cl. 46-161.000.
Manty, Brian A.: *See*—
Fishter, Robert E.; and Manty, Brian A., 4,274,908, Cl. 156-637.000.
Maran, Anthony G.: *See*—
Perry, Richard R.; Maran, Anthony G.; and Schols, Anton G., 4,275,036, Cl. 422-286.000.

Mares, Pedro. Injection molding articles of more than one resin component. 4,275,030, Cl. 264-250.000.

Margerie, Gilbert C. A. Self-supporting building elements and method of manufacture. 4,275,110, Cl. 428-305.000.

Marhold, Albrecht: *See—*
Naumann, Klaus; Behrenz, Wolfgang; Hammar, Ingeborg; Klauke, Erich; and Marhold, Albrecht, 4,275,250, Cl. 568-812.000.

Mark, Victor, to General Electric Company. Process for obtaining halogenated diphenols. 4,275,245, Cl. 568-726.000.

Marlowe, William H.: *See—*
Ban, Thomas E.; and Marlowe, William H., 4,274,836, Cl. 44-6.000.

Marom, Emanuel, to Hughes Aircraft Company. Apparatus for determining the direction of arrival of applied energy. 4,275,399, Cl. 343-113.00R.

Marquez, Victor E.; Liu, Paul S.; and Driscoll, John S., to United States of America, Health, Education and Welfare. Seven-membered ring compounds as inhibitors of cytidine deaminase. 4,275,057, Cl. 424-180.000.

Marrello, Vincent; Onton, Aare; and Ruhle, Wolfgang, to International Business Machines Corporation. Method of improving the memory effect and brightness of an alternating current excited thin film electroluminscent device. 4,275,336, Cl. 315-246.000.

Mars, James E.; Poole, Donald R.; Schmidt, Eckart W.; and Wang, Charles, to Rocket Research Company. High temperature two component explosive. 4,274,893, Cl. 149-2.000.

Marsh, Richard O., Jr. Wedge-tight pipe coupling. 4,274,665, Cl. 285-177.000.

Marshall, Keith: *See—*
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,274,830, Cl. 8-495.000.

Martech International, Inc.: *See—*
Tisdale, Benjamin C., III; and Nicholson, William B., 4,274,799, Cl. 414-747.000.

Martin, Jerry R.: *See—*
Tananier, John S.; and Martin, Jerry R., 4,275,193, Cl. 536-17.00R.

Martin, John C.; and McKee, William C., to Diesel Equipment Limited. Mechanism for loading and unloading pallets from vans. 4,274,789, Cl. 414-501.000.

Martin Marietta Corporation: *See—*
Leighou, Robert O.; and Meeks, Leighton A., 4,275,457, Cl. 364-900.000.

Maruho Co., Ltd.: *See—*
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Maruo, Masatsuyo: *See—*
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Marvin Glass & Associates: *See—*
Ferris, Michael J.; and Arias, Henry, 4,274,629, Cl. 273-1.00R.
Kulesza, Ralph J.; and Breslow, Jeffrey D., 4,274,630, Cl. 273-1.00R.
Morrison, Howard J.; and Disko, Harry, 4,274,223, Cl. 46-95.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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Maschinenfabrik Meyer AG: *See—*
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Maschinenfabrik Zuckermann Komm. Ges.: *See—*
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Mase, Akira: *See—*
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Masonite Corporation: *See—*
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,275,027, Cl. 264-118.000.

Massachusetts Institute of Technology: *See—*
Howland, Bradford, 4,274,737, Cl. 356-124.500.

Massey, Dalton L., to United States of America, Air Force. Multiple diameter wire bundle support. 4,274,612, Cl. 248-74.0PB.

Masurekar, Prakash S., to Eastman Kodak Company. Process and nutrient medium for growing microorganism. 4,275,164, Cl. 435-227.000.

Mathieu, Robert J.: *See—*
Lawson, Alexander E.; Mathieu, Robert J.; and Miller, James M., 4,275,304, Cl. 250-373.000.

Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, to Bridgestone Tire Co., Ltd.; and Mitaka Instrument Co., Ltd. Alarm device for informing reduction of pneumatic pressure of vehicle tires. 4,275,377, Cl. 340-58.000.

Matsuki, Yutaka: *See—*
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Matsumoto, Hiroshi: *See—*
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,274,862, Cl. 71-118.000.

Matsumoto, Junichiro: *See—*
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Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, 4,274,382, Cl. 123-481.000.

Matsumura, Keiji: *See—*
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Matsuno, Osamu: *See—*
Ikenaga, Yukio; and Matsuno, Osamu, 4,274,986, Cl. 260-22.0CQ.

Matsuo, Hirohumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Bright photographic lens system with rear stop diaphragm. 4,274,711, Cl. 350-464.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Mori, Kazuhiro; Misawa, Yoshihiko; Mayahara, Kiyoshi; and Araki, Shigeru, 4,274,529, Cl. 198-339.000.
Tsubusaki, Shigeru; Sonoda, Nobuo; and Shimotsuma, Wataru, 4,275,103, Cl. 428-148.000.
Tsuruha, Masayuki, 4,274,800, Cl. 414-750.000.
Watanabe, Takeo; Kubota, Tadashi; and Yamagami, Akio, 4,275,425, Cl. 360-92.000.

Matsushita Electronics Corporation: *See—*
Ashizaki, Shigeya; Muranishi, Hideo; and Sugahara, Koichi, 4,275,332, Cl. 313-414.000.

Matsuura, Kazuo: *See—*
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,275,161, Cl. 435-190.000.

Matsuyama, Norihide: *See—*
Tamai, Shuichi; and Matsuyama, Norihide, 4,274,822, Cl. 425-127.000.

Mattson, George B.: *See—*
Bolliger, Frederic E.; Woodhouse, Geoffrey D.; Mattson, George B.; Anson, Bruce S.; and Hatch, Robert A., 4,274,253, Cl. 60-39.030.

Matzner, Markus: *See—*
Berger, Mitchell H.; Matzner, Markus; and Gardner, Hugh C., 4,275,188, Cl. 528-193.000.

Maus, L. Donald; and Binder, George G., Jr., to Exxon Production Research Company. Apparatus and method for measuring fluid gel strength. 4,274,283, Cl. 73-153.000.

Maust, Gale E. Hydrostatic-drive tractor. 4,274,505, Cl. 180-215.000.

Maxey, Alexander R., to Arvin Industries, Inc. Scanning type magnetic recorder and cassette. 4,275,424, Cl. 360-85.000.

May, Russell R., Jr., to PPG Industries, Inc. Refractory metal diboride articles by cold pressing and sintering. 4,275,025, Cl. 264-63.000.

Mayahara, Kiyoshi: *See—*
Mori, Kazuhiro; Misawa, Yoshihiko; Mayahara, Kiyoshi; and Araki, Shigeru, 4,274,529, Cl. 198-339.000.

Mayer, Peter: *See—*
Zeyer, Josef; Hutter, Ralf; and Mayer, Peter, 4,274,955, Cl. 210-612.000.

Mayer, Walter P.: *See—*
Barth, Bruce P.; Johnson, Robert N.; and Mayer, Walter P., 4,275,172, Cl. 521-112.000.

McAllister, Lawrence E.; and Dietrich, Herbert, to Fiber Materials, Inc. Method of making a fire retardant polymer resin. 4,275,170, Cl. 521-103.000.

McAllister, LeRoy H., Jr. Formulation containing trinidad asphalt for more ductile asphaltic concrete pavements. 4,274,882, Cl. 106-280.000.

McBride, George H. Slingshot. 4,274,387, Cl. 124-20.00A.

McCarthy, Daniel: *See—*
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McCarthy, James R. Froth separation apparatus. 4,274,949, Cl. 209-17.000.

McClaflin, Gifford G., to Conoco, Inc. Removal of metal alkaryl sulfonates from hydrocarbons. 4,274,943, Cl. 208-181.000.

McCollough, George T.; Esders, Theodore W.; and Lynn, Shirley Y., to Eastman Kodak Company. Process for the recovery of intracellular enzyme. 4,275,166, Cl. 435-227.000.

McComas, Charles C.; Morris, James W.; and Sokol, Larry S., to United Technologies Corporation. Process for carbon bearing MCrAlY coating. 4,275,090, Cl. 427-34.000.

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McGarry, Dennis L., to Owens-Corning Fiberglas Corporation. Manufacturing glass with a bushing having a directionally aligned dispersion strengthened tip plate. 4,274,852, Cl. 65-2.000.

McGee, Joseph R. Gas chromatograph sample conditioner. 4,274,480, Cl. 165-111.000.

McGraner, James E., to Goodyear Tire & Rubber Company, The. Package and method of packaging for flat elongated material. 4,274,538, Cl. 206-394.000.

McKee, William C.: *See—*
Martin, John C.; and McKee, William C., 4,274,789, Cl. 414-501.000.

McKinney, Ray, Jr.: *See—*
Carden, Joseph A., Jr.; and McKinney, Ray, Jr., 4,274,965, Cl. 210-500.200.

McMickle, Robert L.: *See—*
Oberg, Gary R.; and McMickle, Robert L., 4,274,201, Cl. 30-276.000.

McNeely, Wray G.; Jack, Stanton E.; and O'Dette, John H., to Alcan Research and Development Limited. Aluminum powder blasting slurry sensitizer. 4,274,894, Cl. 149-7.000.

McPhail, Shelvey C. Triple-sash double-hung storm window. 4,274,468, Cl. 160-90.000.

McVicker, Gary B.; and Eggert, Joseph J., to Exxon Research & Engineering Co. Preparation of high surface area metal fluorides and metal oxyfluorides, especially aluminum fluoride extrudates. 4,275,046, Cl. 423-258.000.

Mead Corporation, The: *See*—
Burnett, James E.; and Robertson, John A., 4,275,401, Cl. 346-75.000.
Mechanical Technology Incorporated: *See*—
Gray, Stanley; and Bhushan, Bharat, 4,274,683, Cl. 308-9.000.
Med Pump, Inc.: *See*—
Scarlett, John A., 4,274,407, Cl. 128-213.00R.
Medeiros, David E.; and Tarozzi, Richard A., to King-Seeley Thermos Co. Slidable valve for dispensing from an insulated bottle. 4,274,562, Cl. 222-401.000.
Medi-Coll, Inc.: *See*—
Chvapil, Milos, 4,274,410, Cl. 128-270.000.
Medico Electronic, Inc.: *See*—
Chae, Charles H.; Black, Donald E.; and Shah, Ramesh M., 4,274,744, Cl. 356-414.000.
Meeks, Leighton A.: *See*—
Leighou, Robert O.; and Meeks, Leighton A., 4,275,457, Cl. 364-900.000.
Meichsner, Othmar: *See*—
Queiser, Horst; and Meichsner, Othmar, 4,274,962, Cl. 210-257.100.
Meier, Ernst: *See*—
Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,275,200, Cl. 544-137.000.
Meister, John J., to Phillips Petroleum Company. Viscosity measuring device. 4,274,279, Cl. 73-55.000.
Melton, Keith; and Mercier, Olivier, to BBC Brown, Boveri & Company. Brazable shape memory alloys. 4,274,872, Cl. 75-157.500.
Mendenhall, David W.: *See*—
Cobaugh, Robert F.; and Mendenhall, David W., 4,274,693, Cl. 339-65.000.
Menier, Camille. Pump for pumping viscous mixtures. 4,274,559, Cl. 222-217.000.
Menningen, Roland; Ehrsam, Kurt; Oberhansli, Jurg; and Grunig, Kurt, to Hectronic AG. Limit and measurement value transmitter. 4,275,295, Cl. 250-227.000.
Mennino, Michael F., Jr.; and Coppin, Donald J., to GTE Automatic Electric Laboratories Incorporated. Remote time and charge system. 4,275,272, Cl. 179-7.1TP.
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Melton, Keith; and Mercier, Olivier, 4,274,872, Cl. 75-157.500.
Merck & Co., Inc.: *See*—
Patchett, Arthur A.; and Greenlee, William J., 4,275,220, Cl. 560-35.000.
Ratcliffe, Ronald W.; and Salzmann, Thomas N., 4,275,207, Cl. 546-183.000.
Remy, David C., 4,275,070, Cl. 424-267.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Fischer, Wolfgang; and Wissel, Brigitte, 4,275,031, Cl. 422-57.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Pogoda, Dieter, 4,274,887, Cl. 148-31.500.
Messori, Vittorio; Francese, Renato; and Esposito, Roberto, to Rumianca S.p.A. Preparation of chloro-bis(alkylamino)-s-triazines. 4,275,204, Cl. 544-204.000.
Metallurgical Processes Limited: *See*—
Charles, James A., 4,274,878, Cl. 75-256.000.
Mettler, Karl, to Etablissement Supervis. Method and apparatus for producing a workpiece by extrusion molding. 4,274,276, Cl. 72-354.000.
Metz, Paul, to Arbed S.A. Method of treating pollutant-laden gases, especially from a steel-making or coking plant. 4,274,863, Cl. 75-5.000.
Metzeler AB: *See*—
Abrahamsson, Tage, 4,274,960, Cl. 210-221.100.
Micaelli, Odile: *See*—
Gruffaz, Max; and Micaelli, Odile, 4,275,228, Cl. 560-247.000.
Michael, Peter C.: *See*—
Trump, Martin R.; Michael, Peter C.; and Taylor, Richard J., 4,275,418, Cl. 358-167.000.
Michaelis, Paul C., to Bell Telephone Laboratories, Incorporated. Magnetic bubble detector arrangement. 4,275,459, Cl. 365-8.000.
Michaud, Robert P., to Wessendorf, Roberta H. Torque multiplication device. 4,274,310, Cl. 81-57.360.
Michel, Jean P.; Le Can, Claude J. P. F.; and van Buul, Marinus C. W., to U.S. Philips Corporation. Binary analog-digital converter. 4,275,386, Cl. 340-347.0AD.
Michetti, Leonardo: *See*—
Cocito, Giuseppe; and Michetti, Leonardo, 4,274,708, Cl. 350-96.210.
Michrina, Christine A.: *See*—
Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,151, Cl. 435-11.000.
Esders, Theodore W.; Goodhue, Charles T.; and Michrina, Christine A., 4,275,152, Cl. 435-11.000.
Mickelic, Raymond J.: *See*—
Claassen, George R.; and Mickelic, Raymond J., 4,274,858, Cl. 65-273.000.
Micklethwaite, William F. H.: *See*—
White, Arnold G.; Tarbet, James K.; Vanness, Dennis A.; Woods, Gordon J.; and Micklethwaite, William F. H., 4,274,389, Cl. 125-21.000.
Micro Consultants Limited: *See*—
Trump, Martin R.; Michael, Peter C.; and Taylor, Richard J., 4,275,418, Cl. 358-167.000.
Micro Metalsmiths Limited: *See*—
Shaw, Christopher W., 4,274,337, Cl. 105-99.000.
Microcomputer Systems Corp.: *See*—
Gilovich, Paul A.; and Hickox, Thomas A., 4,274,608, Cl. 242-192.000.
Midian Electronics, Inc.: *See*—
Soulliard, Charles, 4,275,271, Cl. 179-2.0EB.
Midway Cap Company: *See*—
Bloom, Bernard, 4,274,160, Cl. 2-195.000.
Mifune, Teruo; Noto, Keiji; Otsu, Yasuo; and Hagiwara, Kotaro, to Sumitomo Electric Industries, Ltd. Roll assembly for use in rolling a wire rod. 4,274,185, Cl. 29-123.000.
Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Method for dispersing oil-soluble photographic additives. 4,275,145, Cl. 430-377.000.
Miles Laboratories, Inc.: *See*—
Kluender, Harold C.; Woessner, Warren D.; and Biddlecom, William G., 4,275,224, Cl. 560-116.000.
Kotick, Michael P.; and Leland, David L., 4,275,205, Cl. 546-44.000.
Miller, Edward A., to RCA Corporation. Centering support for a rotatable wafer support susceptor. 4,275,282, Cl. 219-10.49R.
Miller, Glen E., to Boeing Company, The. Fiberoptic-fed fluid level sensor using a hemiellipsoidal optical element. 4,274,705, Cl. 350-96.150.
Miller, James M.: *See*—
Lawson, Alexander E.; Mathieu, Robert J.; and Miller, James M., 4,275,304, Cl. 250-373.000.
Miller, Lawrence J.; and Born, Raymond W., to Born, Raymond W. Self-centering self-aligning anti-friction rotor and screw. 4,274,296, Cl. 74-424.80R.
Milliken Research Corporation: *See*—
Greenway, John M., 4,274,182, Cl. 26-2.00R.
Min, Cheu H. Low speed adaptor. 4,274,522, Cl. 192-9.000.
Minami, Setsuo: *See*—
Sugiura, Muneharu; and Minami, Setsuo, 4,274,733, Cl. 355-60.000.
Minaminihon Rakuno Kyodo Kabushiki Kaisha: *See*—
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.
Minamizono, Junji: *See*—
Yoneyama, Masakazu; Ino, Shoichi; and Minamizono, Junji, 4,275,146, Cl. 430-523.000.
Mineshima, Nobuaki: *See*—
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, 4,275,194, Cl. 536-20.000.
Minnesota Mining and Manufacturing Company: *See*—
Wylde, Stephen J., 4,274,232, Cl. 51-358.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ishida, Tokuji, 4,275,335, Cl. 315-241.00P.
Taniguchi, Nobuyuki, 4,274,730, Cl. 354-289.000.
Tomonaga, Tetsuo, 4,275,135, Cl. 430-95.000.
Tsujimoto, Kayoshi, 4,274,720, Cl. 354-25.000.
Minoura, Michinori; and Tsuno, Nobuo, to NGK Insulators, Ltd. Process for continuous casting of metals and an apparatus therefor. 4,274,471, Cl. 164-87.000.
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, to Toyo Jozo Kabushiki Kaisha. Process for the manufacture of L-α-glycerophosphate oxidase. 4,275,161, Cl. 435-190.000.
Misawa, Yoshihiko: *See*—
Mori, Kazuhiro; Misawa, Yoshihiko; Mayahara, Kiyoshi; and Araki, Shigeru, 4,274,529, Cl. 198-339.000.
Mishiro, Shoji; and Hamada, Seiji, to Taga Electric Co., Ltd. Method of and apparatus for driving an ultrasonic transducer including a phase locked loop and a sweep circuit. 4,275,363, Cl. 331-4.000.
Miskew, Don B. W. Apparatus for correcting spinal deformities and method for using. 4,274,401, Cl. 128-69.000.
Mitaka Instrument Co., Ltd.: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.
Mitchell, Gary A.: *See*—
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,275,153, Cl. 435-13.000.
Mitchell, William E.: *See*—
French, Tom; Mitchell, William E.; Kenney, Michael J.; and Holmes, Thomas, 4,274,466, Cl. 152-381.300.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Yukimoto, Yoshinori, 4,275,408, Cl. 357-38.000.
Mitsubishi Kinzoku Kabushiki Kaisha: *See*—
Obara, Kunio; Kohno, Tohru; and Sawaguchi, Hiroshi, 4,274,874, Cl. 75-231.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,274,933, Cl. 204-159.240.
Mitsubishi Seiko Kabushikikaisha: *See*—
Yamamoto, Satoshi, 4,274,461, Cl. 152-167.000.
Mitsui Engineering and Shipbuilding Co., Ltd.: *See*—
Teshima, Kiyomi; Tsuboi, Toshio; and Kajitani, Yukimasa, 4,274,804, Cl. 415-121.00A.
Mitsui Toatsu Chemicals, Inc.: *See*—
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, 4,275,240, Cl. 568-37.000.
Miura, Ieaki: *See*—
Kato, Tetuo; and Miura, Ieaki, 4,274,517, Cl. 188-315.000.
Miura, Nobuo: *See*—
Shimizu, Hiroshi; Sato, Hiroshi; Miura, Nobuo; and Inada, Shuzo, 4,275,023, Cl. 264-50.000.

Miyakoshi, Masashi. Antenna coil and its support structure mounting. 4,275,400, Cl. 343-788.000.
Miyanaka, Akiko: *See—*
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.
Mizuno, Masakazu; Igarashi, Isemi; and Inagaki, Hazime, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Catheter tip pressure transducer. 4,274,423, Cl. 128-675.000.
Mo och Domsjo Aktiebolag: *See—*
Svensson, Claes G. S.; Eriksson, Hans E. K.; and Lundgren, Rolf B., 4,274,786, Cl. 414-218.000.
Mo-Wei Hung, William: *See—*
Schmidt, Paul J.; and Mo-Wei Hung, William, 4,274,660, Cl. 282-27.500.
Moberg, William K., to Du Pont de Nemours, E. I., and Company. Fungicidal compounds. 4,275,073, Cl. 424-273.00P.
Mobil Oil Corporation: *See—*
Chu, Chin-Chiun, 4,274,982, Cl. 252-455.00Z.
Chu, Chin-Chiun; and Kaeding, Warren W., 4,275,256, Cl. 585-467.000.
Sherman, Anthony M., 4,275,179, Cl. 525-98.000.
Weiner, Milton L., 4,275,119, Cl. 428-516.000.
Weiner, Milton L., 4,275,120, Cl. 428-516.000.
Mock, Vernon A. High speed programmable pressure-sensitive transfer tape applicator. 4,274,903, Cl. 156-355.000.
Model A and Model T Motor Car Reproduction Corporation, The: *See—*
Olligschlager, Rainer C.; and Turner, Nelson R., 4,274,646, Cl. 280-779.000.
Modes, Vernon E.: *See—*
Tam, Hak W.; and Modes, Vernon E., 4,274,419, Cl. 128-639.000.
Modine Manufacturing Company: *See—*
Cottone, Andrew J.; and Saperstein, Zalman P., 4,274,483, Cl. 165-153.000.
Mogi, Takao: *See—*
Suematsu, Masayuki; Mogi, Takao; and Taki, Akira, 4,275,354, Cl. 328-58.000.
Molins Limited: *See—*
Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., 4,274,530, Cl. 198-347.000.
Molitor, Robert P., to Questor Corporation. Golf ball having cellular cover. 4,274,637, Cl. 273-235.00R.
Mollers Maschinenfabrik GmbH: *See—*
Kaul, Gunther; Grunert, Wilfried; and Aufenvenne, Wilhelm, 4,274,780, Cl. 414-64.000.
Mollohan, Kenneth L.: *See—*
Buechler, Peter R.; Parker, Earl E.; and Mollohan, Kenneth L., 4,274,992, Cl. 260-32.80R.
Molzan, Albert R.; and Cleary, James D., to American Safety Flight Systems, Inc. Oxygen supply system controlled by user exhalation. 4,274,404, Cl. 128-204.250.
Monahan, Charles J.: *See—*
Slattery, Michael J., 4,274,190, Cl. 29-401.100.
Monarch Marking Systems, Inc.: *See—*
Jenkins, William A., 4,274,661, Cl. 283-21.000.
Jenkins, William A., 4,274,902, Cl. 156-344.000.
Monsanto Company: *See—*
Carden, Joseph A., Jr.; and McKinney, Ray, Jr., 4,274,965, Cl. 210-500.200.
Gomez, I. Luis, 4,275,175, Cl. 525-5.000.
Tokas, Edward F., 4,274,984, Cl. 260-4.0AR.
Montealegre, James. Carton with two compartments and blank for forming same. 4,274,578, Cl. 229-27.000.
Montgomery, Robert L.; and Smith, Stuart B., to Southeastern Foam Products, Inc. Apparatus for pre-expanding and molding thermoplastic polymer particles. 4,274,818, Cl. 425-4.00R.
Mookherjee, Braja D.: *See—*
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,275,080, Cl. 426-3.000.
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,275,087, Cl. 426-538.000.
Moolenaar, Jules, to Phos Incorporated. Go/no go pipe deflection gauge. 4,274,206, Cl. 33-178.00B.
Moon, Gary D. Towing and hoisting apparatus. 4,274,791, Cl. 414-563.000.
Moon, Richard E.: *See—*
Joy, Michael; Moon, Richard E.; Quashem, Abul; Lo, Alex; and Dayal, Vijay S., 4,274,162, Cl. 3-1.300.
Moore, Edwin G., to Abbott Laboratories. Standards for determining glycosylated hemoglobin. 4,274,978, Cl. 252-408.000.
Moore, Loren D.: *See—*
Siryj, Bohdan W.; and Moore, Loren D., 4,274,294, Cl. 74-89.150.
Morgan, Martin D.: *See—*
Carter, David C. M.; Leigh, George C.; Applegate, Barry G.; Green, Robert J.; and Morgan, Martin D., 4,274,530, Cl. 198-347.000.
Mori, Kazuhiro; Misawa, Yoshihiko; Mayahara, Kiyoshi; and Araki, Shigeru, to Matsushita Electric Industrial Co., Ltd. Feed-retrieve device for sheet boards. 4,274,529, Cl. 198-339.000.
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, to Nippondenso Co., Ltd. Voltage control apparatus for electric generators for vehicles. 4,275,344, Cl. 322-28.000.
Morinaga Milk Industry Co., Ltd.: *See—*
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.
Morino, Toshiharu; and Okamura, Masayuki, to Aisan Industry Co., Ltd. Variable venturi type carburetor. 4,275,016, Cl. 261-44.00C.
Morioka, Hajimu: *See—*
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, 4,275,157, Cl. 435-115.000.
Moriya, Michio, to Sumitomo Electric Industries, Ltd. Arrangement for mounting a wear detector for brake pad. 4,274,511, Cl. 188-1.00A.
Moriya, Yoshimi: *See—*
Suzuki, Shintaro; Iizuka, Sadao; Moriya, Yoshimi; and Omote, Yuichi, 4,274,865, Cl. 75-0.5AA.
Moroto, Shuzo; and Kobayashi, Kouji, to Aisin-Warner K.K. Lock-up clutch for a hydraulic unit. 4,274,519, Cl. 192-3.280.
Morris, James W.: *See—*
McComas, Charles C.; Morris, James W.; and Sokol, Larry S., 4,275,090, Cl. 427-34.000.
McComas, Charles C.; Morris, James W.; and Sokol, Larry S., 4,275,124, Cl. 428-564.000.
Morris, Joe P.: *See—*
Yang, Wen C.; Spangler, Charles E.; Morris, Joe P.; and Keairns, Dale L., 4,275,353, Cl. 324-454.000.
Morrison, Howard J.; and Disko, Harry, to Marvin Glass & Associates. Water toy. 4,274,223, Cl. 46-95.000.
Morton, Douglas R., Jr., to Upjohn Company, The. 9,11-Dideoxy-10-oxa-TXB intermediates. 4,275,197, Cl. 542-413.000.
Moss, Brian F., to Ciba-Geigy AG. Masking frame. 4,274,734, Cl. 355-74.000.
Motz, Herbert: *See—*
Schoenafinger, Eduard; Motz, Herbert; Ohlinger, Manfred; Deigner, Paul; and Grau, Werner, 4,275,114, Cl. 428-328.000.
Mouille, Rene L.; and Ortega, Edwin, to Societe Nationale Industrielle Aerospatiale. Multi-directional suspension means for rotor aircraft. 4,274,510, Cl. 188-1.00B.
Mounteer, Keith J.: *See—*
DiGregorio, David; McCarthy, Daniel; Mounteer, Keith J.; and Thompson, Charles D., 4,275,020, Cl. 261-111.000.
Mower, Lawrence N.: *See—*
Hollingsworth, Frank H.; Jenkins, George R.; Kirkpatrick, John W.; and Mower, Lawrence N., 4,274,487, Cl. 166-261.000.
Mt. Sinai School of Medicine of the City University of New York: *See—*
Rosenfield, Richard E.; and Kochwa, Shaul, 4,275,053, Cl. 424-12.000.
MTS Systems Corporation: *See—*
Gram, Martin M., 4,274,290, Cl. 73-837.000.
Mudge, Philip H., to Arrowhead Enterprises, Inc. Passive infrared intrusion detection system. 4,275,303, Cl. 250-342.000.
Mueller, Edward E.; and Harrod, Michael K., to Whirl-Air-Flow Corporation. Bag opening and emptying apparatus. 4,274,787, Cl. 414-412.000.
Mueller, Martin S.: *See—*
Carter, William D.; and Mueller, Martin S., 4,274,731, Cl. 355-30.000.
Mueller, Walter B.; Schirmer, Henry G.; Schoenberg, Julian H.; and Weinberg, Alan S., to W. R. Grace & Co. Multi-layer polyester/-polyolefin shrink film. 4,274,900, Cl. 156-229.000.
Mukainakano, Siniti: *See—*
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.
Mullard Limited: *See—*
Shannon, John M., 4,275,405, Cl. 357-23.000.
Muller, Alain: *See—*
Huber, Andre; Muller, Alain; and Soffer, Jacques, 4,275,341, Cl. 318-376.000.
Muller, Bernt; and Theden, Ulrich, to Robert Bosch GmbH. Monolithic semiconductor pressure sensor, and method of its manufacture. 4,275,406, Cl. 357-26.000.
Muller, Hans-Ueli: *See—*
Festag, Werner; Muller, Hans-Ueli; and Stanek, Oldrich, 4,274,541, Cl. 206-613.000.
Muller, Paul A.; and Muster, Hans. Material web for the manufacture of filter rods for tobacco products and apparatus and process for producing such web. 4,274,428, Cl. 131-331.000.
Muller, Walter: *See—*
Walkenhorst, Wilfried; Gauer, Richard; Wild, Gerhard; and Muller, Walter, 4,275,177, Cl. 525-53.000.
Mullins, Wayne L. Mold box apparatus. 4,274,824, Cl. 425-253.000.
Multakh, Leonid, to Acker Drill Company, Inc.; and Acker Drill Company, Inc. Impregnated diamond drill bit construction. 4,274,769, Cl. 408-145.000.
Mumford, Eustace H., to Owens-Illinois, Inc. Plunger operating mechanism for a glass forming machine. 4,274,859, Cl. 65-314.000.
Mummert, Thomas A., to Jobst Institute, Inc. Therapeutic appliance for flexing joints. 4,274,399, Cl. 128-26.000.
Munari, Giovanni. Process for manufacturing heat-sealed proofed paper or card on a Fourdrinier machine. 4,274,915, Cl. 162-129.000.
Munekata, Seiji: *See—*
Yamabe, Masaaki; Kumai, Seisaku; and Munekata, Seiji, 4,275,226, Cl. 560-183.000.

Murakami, Hisamichi: *See*—
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, 4,275,240, Cl. 568-37.000.

Muranishi, Hideo: *See*—
Ashizaki, Shigeya; Muranishi, Hideo; and Sugahara, Koichi, 4,275,332, Cl. 313-414.000.

Murasawa, Sadao; and Maruo, Masatsuyo, to Ishihara Sangyo Kaisha, Ltd. Liquid developer for color electrophotography. 4,275,136, Cl. 430-117.000.

Murata Manufacturing Co., Ltd.: *See*—
Nakayama, Fumio; and Funahara, Toshikazu, 4,275,357, Cl. 330-107.000.

Murdock, Keith C., to American Cyanamid Company. 1-(Aminoalkylamino)-5,8-dihydroxy-4-substituted-anthraquinones. 4,275,009, Cl. 260-380.000.

Murdock, Keith C., to American Cyanamid Company. 5,8-Dihydroxy-1,4-bis(guanidinylamino)anthraquinones. 4,275,010, Cl. 260-380.000.

Murphy, Clarence R.; Thackabeery, S. Paul; Boehme, Robert E., deceased; and by Boehme, Helen J., sole beneficiary, to Gulf Oil Corporation. Paper products. 4,274,917, Cl. 162-146.000.

Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., to International Flavors & Fragrances Inc. Flavoring with 8-p-cymenyl-ethyl ether. 4,275,080, Cl. 426-3.000.

Muster, Hans: *See*—
Muller, Paul A.; and Muster, Hans, 4,274,428, Cl. 131-331.000.

Musto, Richard L., to Combustion Engineering, Inc. Imp mill having adjustment means. 4,274,601, Cl. 241-186.200.

Muto, Katsuya: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Myers, Delbert L. Controlled air intake apparatus for furnaces and the like. 4,274,392, Cl. 126-112.000.

Myers, Harry K., Jr.: *See*—
Schneider, Abraham; Myers, Harry K., Jr.; and Suld, George, 4,275,254, Cl. 585-14.000.

Mylonakis, Stamatios G.; and Tortorello, Anthony J., to DeSoto, Inc. Polymers having improved water resistance and monomers for same. 4,275,229, Cl. 562-459.000.

N & H Manufacturing, Inc.: *See*—
Hargett, Jerry D.; and Nash, Alfred C., 4,274,690, Cl. 339-10.000.

Nabors, James B.: *See*—
Petree, Harris E.; and Nabors, James B., 4,275,238, Cl. 564-446.000.

Nachtigal, Julius H.; and Zajac, David C., to Conair Corporation. Hair conditioner having a stabilized, pearlescent effect. 4,275,055, Cl. 424-70.000.

Nadkarni, Anil V., to SCM Corporation. Dispersion strengthened metals. 4,274,873, Cl. 75-211.000.

Nagae, Hiromitsu: *See*—
Fukumori, Yukitsugu; Sone, Masazumi; Nagae, Hiromitsu; Shida, Masami; Kooriyama, Tsutomu; and Harada, Koji, 4,274,695, Cl. 339-97.00S.

Nagao, Tsukasa. Optical wave circulators. 4,274,710, Cl. 350-375.000.

Nagasawa, Sigeo: *See*—
Shirai, Akira; and Nagasawa, Sigeo, 4,274,258, Cl. 60-547.00R.

Nagel, Guenter: *See*—
Bannert, Johann; and Nagel, Guenter, 4,274,701, Cl. 339-217.00S.

Nakagawa, Yasutsugu: *See*—
Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, 4,274,726, Cl. 354-173.000.

Nakai, Hisao: *See*—
Kurono, Masayasu; Nakai, Hisao; and Sakuyama, Shigeru, 4,275,075, Cl. 424-305.000.

Nakaji, Tarushige: *See*—
Ohyabu, Shuzo; Kurosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, 4,275,084, Cl. 426-104.000.

Nakajima, Yukio, to Olympus Optical Company Ltd. Indicator circuit for auto-strobo unit. 4,274,724, Cl. 354-33.000.

Nakamura, Iwao. Die changing apparatus for press. 4,274,332, Cl. 100-299.000.

Nakamura, Kenji; Ishikawa, Masao; and Ajimine, Akio, to Nissan Motor Company, Limited. Illuminated indicator gauge. 4,274,358, Cl. 116-288.000.

Nakane, Mototaka, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Rotational torque transmission mechanism. 4,274,524, Cl. 192-48.300.

Nakano, Motoo: *See*—
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, 4,275,093, Cl. 427-89.000.

Nakano, Tasuku; and Hamamoto, Tadanao, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Traffic indicator. 4,275,379, Cl. 340-81.00R.

Nakashio, Yoshimi: *See*—
Kikuiri, Makoto; Nakashio, Yoshimi; Arai, Yasue; and Hidaka, Toshio, 4,274,913, Cl. 162-65.000.

Nakayama, Fumio; and Funahara, Toshikazu, to Murata Manufacturing Co., Ltd. Active filter. 4,275,357, Cl. 330-107.000.

Nakayama, Hiroyuki; Kato, Akira; and Tsuchiya, Masuo, to Kansai Paint Co., Ltd. Method for producing a plate or sheet useful in planographic printing. 4,275,092, Cl. 427-54.100.

Napiorkowski, John, to TII Corporation. Thermal switch short circuiting device for arrester systems. 4,275,432, Cl. 361-124.000.

Nardi, Dante; Tajano, Alberto; and Magistretti, Maria J., to Recordati S.A. Imidazole derivatives. 4,275,071, Cl. 424-273.00R.

Narisawa, Shigeyuki; Yanase, Hiroshi; and Kanno, Fukuo, to Asahi Glass Company, Ltd. Moldable polyphenylenesulfide. 4,274,993, Cl. 260-37.00R.

Naruse, Tunehide, to Victor Company of Japan, Limited. Magnetic recording composition and article coated therewith. 4,275,115, Cl. 428-329.000.

Narutomi, Yasuhisa: *See*—
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,275,138, Cl. 430-157.000.

Nash, Alfred C.: *See*—
Hargett, Jerry D.; and Nash, Alfred C., 4,274,690, Cl. 339-10.000.

Nash, Martin E.: *See*—
Huxley, Edward E.; and Nash, Martin E., 4,275,218, Cl. 549-87.000.

National Institute for Metallurgy: *See*—
Verbaan, Bernard, 4,274,931, Cl. 204-119.000.

National Patent Development Corp.: *See*—
Kita, Nobuyuki; and Narutomi, Yasuhisa, 4,275,138, Cl. 430-157.000.

National Research Development Corporation: *See*—
Aish, Roslyn R., 4,275,449, Cl. 364-512.000.
Creighton, Andrew M., 4,275,063, Cl. 424-250.000.
Delpy, David T., 4,274,417, Cl. 128-632.000.
Ross, Walter C. J., 4,275,000, Cl. 260-112.00R.

National Research Institute for Metals: *See*—
Tachikawa, Kyoji; Tanaka, Yoshiaki; Yoshida, Yuji; and Asano, Toshihisa, 4,274,889, Cl. 148-133.000.

National Semiconductor Corporation: *See*—
Wilcox, Milton E., 4,275,419, Cl. 358-167.000.

Naulapaa, Erkki U.; and Halko, Pekka. Method and apparatus for optical measurement of the dimension of an object. 4,274,743, Cl. 356-387.000.

Naumann, Klaus; Behrenz, Wolfgang; Hammann, Ingeborg; Klauke, Erich; and Marhold, Albrecht, to Bayer Aktiengesellschaft. Fluorobenzyl alcohols. 4,275,250, Cl. 568-812.000.

Nautamix B. V.: *See*—
Snel, Martinus A., 4,274,988, Cl. 260-23.0XA.

NCR Corporation: *See*—
Gardner, Harry N.; and Gravelle, Wayne R., 4,275,380, Cl. 340-146.30Z.

Nei, Hiromichi; Ohtani, Ryoichi; Ohshima, Iwao; and Horikawa, Yuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Plugging indicator. 4,274,280, Cl. 73-61.0LM.

Neiss, Melvin A., to Du Pont de Nemours, E. I., and Company. Process for preparation of high opacity photosensitive images. 4,275,140, Cl. 430-254.000.

Neitz, Alfred; and D'Alfonso, Nunzio, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Apparatus for preheating the intake air for air-compressing internal combustion engines. 4,274,371, Cl. 123-179.00H.

Nelle, Horst: *See*—
Schnurbus, Heinrich; Nelle, Horst; and Wolf, Wilhelm, 4,274,888, Cl. 148-108.000.

Nemoto, Ichiro; and Onda, Eiichi, to Seiko Koki Kabushiki Kaisha. Fail-safe system for the electronic shutter of a camera. 4,274,727, Cl. 354-234.000.

Neumann, Otto W.; and Henkel, James A., to AMSTED Industries Incorporated. Railway car truck frictional snubbing arrangement. 4,274,340, Cl. 105-197.0DB.

Newkirk, William E.: *See*—
Cioffi, Paul L.; Downs, William; Kish, William C.; and Newkirk, William E., 4,274,587, Cl. 239-132.300.

Newmont Exploration Limited: *See*—
Yannopoulos, John C., 4,274,870, Cl. 75-73.000.

NGK Insulators, Ltd.: *See*—
Minoura, Michinori; and Tsuno, Nobuo, 4,274,471, Cl. 164-87.000.
Yamamoto, Noboru; and Ohmura, Akira, 4,275,259, Cl. 136-209.000.

Nichols, Tisha: *See*—
Hart, Patricia E.; and Nichols, Tisha, 4,275,088, Cl. 426-554.000.

Nicholson, William B.: *See*—
Tisdale, Benjamin C., III; and Nicholson, William B., 4,274,799, Cl. 414-747.000.

Nider, William K. Apparatus for carbonizing an agricultural product. 4,274,342, Cl. 110-246.000.

Nider, William K. Process for carbonizing an agricultural product. 4,274,344, Cl. 110-346.000.

Nihon Radiator Co., Ltd.: *See*—
Sonoda, Noriaki, 4,274,482, Cl. 165-153.000.

Nihon Tennen Gas Kogyo Co., Ltd.: *See*—
Kato, Masatada; Mineshima, Nobuaki; Kato, Tatsuo; Kawada, Yoshiharu; Hanada, Hironori; and Inomata, Teiichi, 4,275,194, Cl. 536-20.000.

Nikolic, Zivomir. Radiator for low-pressure steam heating systems. 4,274,477, Cl. 165-101.000.

Nilsen, Christopher. Tree shear blade structure. 4,274,457, Cl. 144-34.00E.

Nimrod, Beatrice. Method for guide-wire placement and novel syringe therefor. 4,274,408, Cl. 128-214.400.

Nimura, Takayasu: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.

Nippon Kogaku K.K.: *See*—
Fukuhara, Toru; and Saegusa, Takashi, 4,274,721, Cl. 354-31.000.

Nippon Kokan Kabushiki Kaisha: *See*—
Gunji, Naoki; and Ito, Saburo, 4,275,098, Cl. 427-345.000.

Nippon Paint Co., Ltd.: *See*—
Sakurai, Kiyomi, 4,275,143, Cl. 430-307.000.
Nippon Soken, Inc.: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.
Watanabe, Toshio; and Hattori, Tadashi, 4,275,328, Cl. 313-123.000.
Nippondenso Co., Ltd.: *See*—
Mori, Kazumasa; Asahi, Taro; Banzai, Keiichiro; Iwaki, Katsutaro; Muto, Katsuya; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,275,344, Cl. 322-28.000.
Okumura, Shunji, 4,274,265, Cl. 62-158.000.
Nishida, Masayuki: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.
Nishida, Reijiro: *See*—
Tominaga, Akira; and Nishida, Reijiro, 4,274,989, Cl. 260-29.2TN.
Nishikawa, Tadashi. Wiping device. 4,274,175, Cl. 15-250.240.
Nishikawa, Yoshiyasu, to Kawasaki Jukogyo Kabushiki Kaisha. Diagonal-flow fan wheel with blades of developable surface shape. 4,274,810, Cl. 416-186 00R.
Nishimura, Hiroyuki: *See*—
Osawa, Keiichi; Ishii, Kiyoshi; and Nishimura, Hiroyuki, 4,274,384, Cl. 123-568.000.
Nishimura, Takayuki, to G. N. Tool Inc. Boring reamer with end mill cutters. 4,274,771, Cl. 408-230.000.
Nishino, Hiroshi: *See*—
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.
Nissan Motor Company, Limited: *See*—
Abo, Toshimi, 4,274,381, Cl. 123-479.000.
Fukumori, Yukitsugu; Sone, Masazumi; Nagae, Hiromitsu; Shida, Masami; Kooriyama, Tsutomu; and Harada, Koji, 4,274,695, Cl. 339-97.00S.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,307, Cl. 74-869.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,308, Cl. 74-869.000.
Nakamura, Kenji; Ishikawa, Masao; and Ajimine, Akio, 4,274,358, Cl. 116-288.000.
Sone, Masazumi; Suzuki, Kazuhiko; and Fukumori, Yukitsugu, 4,274,843, Cl. 55-139.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, 4,274,373, Cl. 123-440.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, 4,274,382, Cl. 123-481.000.
Tsuda, Yoshitaka; Sodeyama, Kaoru; and Tsunada, Naomasa, 4,274,681, Cl. 303-6.00C.
Yuzawa, Haruo; and Yano, Tsuneomi, 4,274,385, Cl. 123-571.000.
Nissin Kogyo Kabushiki Kaisha: *See*—
Yamazaki, Yuzo, 4,275,280, Cl. 200-61.850.
Niwa, Yukichi: *See*—
Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, 4,274,735, Cl. 356-1.000.
NL Industries, Inc.: *See*—
Augustyn, Edward J., 4,274,987, Cl. 260-23.00H.
Davis, Brian R., 4,275,040, Cl. 423-82.000.
Waldman, Joseph L.; Klein, Edgar; Kulling, Achim; and Rahm, Joseph A., 4,275,041, Cl. 423-82.000.
Noack, Christian: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.
Noble, Allen T. Land irrigation system and method. 4,274,584, Cl. 239-1.000.
Nolting, Karl-Heinz: *See*—
Bernat, Georg; Nolting, Karl-Heinz; and John, Claus, 4,274,442, Cl. 137-625.170.
Nordtvedt, Svein. Mesh distribution wheels. 4,274,184, Cl. 29-121.100.
Noren, Tore H. Motor driven endless tray accumulator for dishwashing. 4,274,886, Cl. 134-25.200.
Norimatsu, Michio, to Kabushiki Kaishi Yamazaki Tekkosho. Tool shifter. 4,274,192, Cl. 29-568.000.
Noritake, Tsuguo: *See*—
Takagi, Masatomo; Noritake, Tsuguo; and Ogaki, Mitsuo, 4,274,547, Cl. 220-4.00R.
Norman, Robert M. Self-propelled underwater trenching apparatus and method. 4,274,760, Cl. 405-163.000.
Norris, George W., to Westinghouse Electric Corp. Tube plug weld inspection apparatus. 4,275,414, Cl. 358-100.000.
North, John W. Process and apparatus for producing cellulated vitreous refractory material in prescribed shapes and products therefrom. 4,274,825, Cl. 432-13.000.
Northern Telecom Limited: *See*—
Cielo, Paolo; and Westwood, William D., 4,275,290, Cl. 219-216.000.
Pacey, Grant K.; and Hvezda, Jaroslav M., 4,274,707, Cl. 350-96.200.
Noto, Keiji: *See*—
Mifune, Teruo; Noto, Keiji; Otsu, Yasuo; and Hagiwara, Kotaro, 4,274,185, Cl. 29-123.000.
Novak, Donald S., to Diamond Shamrock Corporation. Chemical removal of silicon from waste brine stream for chlor-alkali cell. 4,274,929, Cl. 704-98.000.
Numata, Saburo, to Fuji Photo Optical Co., Ltd. Automatic flash light control device for camera. 4,274,722, Cl. 354-33.000.
N.V. Optische Industrie "De Oude Delft": *See*—
Houtkamp, Johannes J., 4,275,326, Cl. 313-102.000.
Obara, Kunio; Kohno, Tohru; and Sawaguchi, Hiroshi, to Mitsubishi Kinzoku Kabushiki Kaisha. Copper-tin type sintered alloy for oil-impregnated bearing excellent in bearing performance as bearing used in low-load and high-velocity region. 4,274,874, Cl. 75-231.000.
Obbola Linerboard Aktiebolag: *See*—
Kroneld, Erik G.; and Andersson, Per-Erik, 4,274,911, Cl. 162-15.000.
Oberg, Carl L.: *See*—
Friedman, Joseph; Oberg, Carl L.; and Russell, Larry H., 4,275,034, Cl. 422-194.000.
Oberg, Gary R.; and McMickle, Robert L., to Berkley and Company, Inc. Rotary cutting assembly with filament feed. 4,274,201, Cl. 30-276.000.
Oberhansli, Jurg: *See*—
Menningen, Roland; Ehrsam, Kurt; Oberhansli, Jurg; and Grunig, Kurt, 4,275,295, Cl. 250-227.000.
Occidental Research Corporation: *See*—
Compton, Leslie E., 4,274,934, Cl. 204-162.00R.
Sikdar, Subhas K.; Adam, Donald E.; and Winterbottom, Howard, 4,275,038, Cl. 423-321.00S.
Stewart, Robert D., 4,274,956, Cl. 210-638.000.
Oce-van der Grinten N.V.: *See*—
Verhoof, Adrianus J. N. A., 4,275,137, Cl. 430-149.000.
O'Dette, John H.: *See*—
McNeely, Wray G.; Jack, Stanton E.; and O'Dette, John H., 4,274,894, Cl. 149-7.000.
Ogaki, Mitsuo: *See*—
Takagi, Masatomo; Noritake, Tsuguo; and Ogaki, Mitsuo, 4,274,547, Cl. 220-4.00R.
Ogasa, Katsuhiro: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.
Ogawa, Kunio; and Iio, Hiromitsu, to Sumitomo Metal Mining Co. Ltd. Method and apparatus for charging anode scraps to a converter furnace. 4,274,785, Cl. 414-173.000.
Ogawa, Masahiko: *See*—
Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, 4,274,735, Cl. 356-1.000.
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, to Bridgestone Tire Co., Ltd.; and Ube Industries, Ltd. Pneumatic tire having an improved resistance against heat build-up employing syndiotactic-1,2-polybutadiene fibers in tread base rubber. 4,274,462, Cl. 152-209.00R.
Ogino, Yasuo: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, 4,275,306, Cl. 250-548.000.
Ohlinger, Manfred: *See*—
Schoenafinger, Eduard; Motz, Herbert; Ohlinger, Manfred; Deigner, Paul; and Grau, Werner, 4,275,114, Cl. 428-328.000.
Ohmori, Hisashi, to Kawasaki Steel Corporation. Device for separating slag from molten bath. 4,274,622, Cl. 266-227.000.
Ohmura, Akira: *See*—
Yamamoto, Noboru; and Ohmura, Akira, 4,275,259, Cl. 136-209.000.
Ohshima, Iwao: *See*—
Nei, Hiromichi; Ohtani, Ryoichi; Ohshima, Iwao; and Horikawa, Yuji, 4,274,280, Cl. 73-61.0LM.
Ohshima, Masauki, to Sanyo Electric Co., Ltd.; and Tottori Sanyo Electric Co., Ltd. Display device. 4,274,217, Cl. 40-451.000.
Ohtani, Ryoichi: *See*—
Nei, Hiromichi; Ohtani, Ryoichi; Ohshima, Iwao; and Horikawa, Yuji, 4,274,280, Cl. 73-61.0LM.
Ohtsuka, Kunio: *See*—
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,307, Cl. 74-869.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,308, Cl. 74-869.000.
Ohtsuru, Masashi: *See*—
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Ohtsuru, Masashi; and Yamazaki, Shiro, 4,275,078, Cl. 424-324.000.
Ohyabu, Nobuyoshi: *See*—
Jensen, Torkil H.; Ohyabu, Nobuyoshi; and Hsieh, Chung-Lih, 4,274,919, Cl. 176-3.000.
Ohyabu, Shuzo; Karosaki, Syozi; Matsumura, Keiji; Akasu, Hiroyuki; Akiya, Takeo; Yagi, Naoki; Kim, Kwang Y.; Nakaji, Tarushige; and Miyanaka, Akiko, to Kuraray Co., Ltd.; and Minaminihon Rakuno Kyodo Kabushiki Kaisha. Formed food product of microfibrillar protein and process for the production thereof. 4,275,084, Cl. 426-104.000.
Okamura, to Honda Lock Mfg. Co., Ltd. Key controlled, position sensitive, portable alarm. 4,275,391, Cl. 340-571.000.
Okamura, Makoto. Rear viewer for automobile. 4,274,714, Cl. 350-452.000.
Okamura, Masayuki: *See*—
Morino, Toshiharu; and Okamura, Masayuki, 4,275,016, Cl. 261-44.00C.
O'Keefe, George F.: *See*—
Roy, Donald A.; O'Keefe, George F.; and Kutelis, Carl R., 4,274,316, Cl. 83-23.000.

Okumura, Shunji, to Nippondenso Co., Ltd. Method and apparatus for automatically operating car-mounted air-conditioner. 4,274,265, Cl. 62-158.000.
Olin Corporation: *See*—
Yarwood, John C.; and Tyler, Derek E., 4,274,470, Cl. 164-49.000.
Oliva, Klaus: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.
Olligschlager, Rainer C.; and Turner, Nelson R., to Model A and Model T Motor Car Reproduction Corporation, The. Steering column and cowl support frame. 4,274,646, Cl. 280-779.000.
Olsgaard, Orin J. Expansible chamber device. 4,274,327, Cl. 91-196.000.
Olson, John E., to Cascade Corporation. Lift truck having rotatable platen for handling unpalletized loads and method for using same. 4,274,794, Cl. 414-663.000.
Olympus Optical Company Ltd.: *See*—
Nakajima, Yukio, 4,274,724, Cl. 354-33.000.
Omodei-Sale', Amedeo: *See*—
Guzzi, Umberto; Omodei-Sale', Amedeo; and Galliani, Giulio, 4,275,066, Cl. 424-258.000.
Omote, Yuichi: *See*—
Suzuki, Shintaro; Iizuka, Sadao; Moriya, Yoshimi; and Omote, Yuichi, 4,274,865, Cl. 75-0.5AA.
Onda, Eiichi: *See*—
Nemoto, Ichiro; and Onda, Eiichi, 4,274,727, Cl. 354-234.000.
Ono, Eiji: *See*—
Tanaka, Takashi; Ono, Eiji; and Takinami, Koichi, 4,275,011, Cl. 260-410.700.
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, 4,275,157, Cl. 435-115.000.
ONO Pharmaceutical Co. Ltd.: *See*—
Kurono, Masayasu; Nakai, Hisao; and Sakuyama, Shigeru, 4,275,075, Cl. 424-305.000.
Onton, Aare: *See*—
Marrello, Vincent; Onton, Aare; and Ruhle, Wolfgang, 4,275,336, Cl. 315-246.000.
Oota, Masanori: *See*—
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katsumi, 4,275,178, Cl. 525-71.000.
Op Het Veld, Adriaan J. G.: *See*—
Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,275,091, Cl. 427-53.100.
Oqilvy, James J.: *See*—
Jullien, Graham A., 4,274,638, Cl. 273-238.000.
Orban, Ivan; and Troxler, Eduard, to Ciba-Geigy Corporation. Process for preparing 2,2,6,6-tetraalkyl-4-oxopiperidines. 4,275,211, Cl. 546-242.000.
O'Riordain, Diarmuid, to Southern Chemicals Limited. Roof structure. 4,274,238, Cl. 52-408.000.
Orr, James A. Strand lifting system. 4,274,618, Cl. 254-29.00A.
Ortega, Edwin: *See*—
Mouille, Rene L.; and Ortega, Edwin, 4,274,510, Cl. 188-1.00B.
Orthoplant Orthopadische Implantate GmbH & Co. KG: *See*—
Rehder, Gunther; and Rusdea, Johann, 4,274,164, Cl. 3-1.913.
Orvik, Jon A., to Dow Chemical Company, The. Method of preparing pyridinyloxyphenols and derivatives. 4,275,212, Cl. 546-290.000.
Oryx, Inc.: *See*—
Jordan, Frederick L., 4,274,835, Cl. 44-1.0SR.
Osaka Nagayanagi Cork Ind., Co., Ltd.: *See*—
Tamai, Shuichi; and Matsuyama, Norihide, 4,274,822, Cl. 425-127.000.
Osawa, Keiichi; Ishii, Kiyoshi; and Nishimura, Hiroyuki, to Honda Giken Kogyo Kabushiki Kaisha. Engine exhaust gas recirculation system. 4,274,384, Cl. 123-568.000.
Ose, Akio: *See*—
Kimura, Shigenobu; Kubo, Yoshiro; Bando, Shigeru; Ose, Akio; Kinoshita, Yukuo; Higashizono, Ryoichi; and Hanamiya, Ikuo, 4,274,424, Cl. 128-686.000.
Oshio, Hiromichi: *See*—
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,274,862, Cl. 71-118.000.
Ostrander, Robert J. Drive unit seal assembly. 4,274,298, Cl. 74-467.000.
Otis Engineering Corporation: *See*—
Fredd, John V., 4,274,485, Cl. 166-250.000.
Fredd, John V., 4,274,486, Cl. 166-250.000.
Tunstall, Karl N.; and Warren, M. L., 4,274,432, Cl. 137-315.000.
Otisca Industries, Ltd.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,274,946, Cl. 209-5.000.
Otsu, Yasuo: *See*—
Mifune, Teruo; Noto, Keiji; Otsu, Yasuo; and Hagiwara, Kotaro, 4,274,185, Cl. 29-123.000.
Otterson, Lewis L., to Weatherchem Corporation. Plastic end closure for hermetically sealed container. 4,274,563, Cl. 222-480.000.
Otto, Gunter. Tool balancing apparatus. 4,274,495, Cl. 173-162.00R.
Outboard Marine Corporation: *See*—
Cavil, David T.; and Krueger, William R., 4,275,322, Cl. 310-111.000.
Owada, Mitsutoshi: *See*—
Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, 4,274,735, Cl. 356-1.000.
Owen, Edwin L.: *See*—
Lai, Ralph W. M.; and Owen, Edwin L., 4,274,866, Cl. 75-5.000.
Owens-Corning Fiberglas Corporation: *See*—
Canfield, Sheldon A.; Pierce, Richard H.; and Rapp, Kenneth L., 4,275,297, Cl. 250-239.000.
Hanna, Terry J., 4,274,853, Cl. 65-2.000.
McGarry, Dennis L., 4,274,852, Cl. 65-2.000.
Russell, Robert G., 4,274,855, Cl. 65-2.000.
Owens-Illinois, Inc.: *See*—
Mumford, Eustace H., 4,274,859, Cl. 65-314.000.
Owens Service Corporation: *See*—
Andres, Robert W., 4,274,264, Cl. 62-148.000.
OY. Tampella AB: *See*—
Haikkala, Pekka O., 4,274,600, Cl. 241-18.000.
Ozaltay, Huseyin C. Coal gasifying burner with rotating grill. 4,274,341, Cl. 110-229.000.
Ozensoy, Erol; and Burkin, Alfred R., to Interox Chemicals Limited. Separation of tungsten and molybdenum by solvent extraction. 4,275,039, Cl. 423-54.000.
P.I. Specialist Engineers Limited: *See*—
Delgado, Patricio E.; and Holmes, Barry A., 4,274,809, Cl. 416-117.000.
Pacala, Thomas J.: *See*—
United States of America, National Aeronautics and Space Administration; Laudenslager, James B.; and Pacala, Thomas J., 4,275,317, Cl. 307-415.000.
Pacey, Grant K.; and Hvezda, Jaroslav M., to Northern Telecom Limited. Apparatus for fusion splicing of optical fibers. 4,274,707, Cl. 350-96.200.
Pacific Electricord Company: *See*—
Dodge, Donald M.; and Dietz, Ernest, 4,274,697, Cl. 339-103.00R.
Pagel, Werner: *See*—
Roth, Mario; Pagel, Werner; Rissmann, Heinz-Bernd; and Happich, Karl-Christoph, 4,274,792, Cl. 414-564.000.
Paget, Charles J., Jr., to Eli Lilly and Company. Substituted 2-anilinobenzoxazoles. 4,275,210, Cl. 546-222.000.
Painter, P. Eric; and Fisher, Curtis P., to A-T-O, Inc. Spring installation tool for article loading machine. 4,274,187, Cl. 29-225.000.
Pakogian, Sarkis B. Combination soccer/hockey game board. 4,274,635, Cl. 273-85.00R.
Pall Corporation: *See*—
Cooper, Roydon B., 4,274,445, Cl. 137-636.100.
Palmer, Willy F. Method and device for purifying sewage. 4,274,966, Cl. 210-618.000.
Panandiker, K. A. Pai: *See*—
Danick, Charles; and Panandiker, K. A. Pai, 4,275,189, Cl. 528-296.000.
Panzer, Hans P.: *See*—
Goodman, Richard M.; and Panzer, Hans P., 4,274,945, Cl. 209-5.000.
Papeschi, Roberto: *See*—
Balzarini, Giovanni; Buccino, Giovanni; Gnadeberg, Jules; Papeschi, Roberto; and Slavich, Giancarlo, 4,275,451, Cl. 364-580.000.
Pappo, Raphael: *See*—
Apple, Martin A.; and Pappo, Raphael, 4,275,192, Cl. 536-17.00A.
Paradowski, Henri: *See*—
Garier, Christian; and Paradowski, Henri, 4,274,849, Cl. 62-9.000.
Park Mobile, Inc.: *See*—
Evans, Edward N., 4,274,226, Cl. 49-25.000.
Parker, Earl E.: *See*—
Buechler, Peter R.; Parker, Earl E.; and Mollohan, Kenneth L., 4,274,992, Cl. 260-32.80R.
Parker, William H.; and Davidson, Harry T., to Del Norte Technology, Inc. FM Radio ranging system. 4,275,398, Cl. 343-112.00R.
Pars Engineering Company Limited: *See*—
Proctor, Sidney E., 4,274,677, Cl. 299-92.000.
Passafiume, Anthony; Lamber, Clarence F.; and Dickover, William, to Johnson & Johnson. Apparatus for shaping batts of loosely compacted fibrous materials. 4,274,318, Cl. 83-177.000.
Patchett, Arthur A.; and Greenlee, William J., to Merck & Co., Inc. Process for preparing amino acids and esters. 4,275,220, Cl. 560-35.000.
Pater, Hendrik; and Torgersen, G. Earl, to Pater, Hendrik. Monorail guideway assembly. 4,274,336, Cl. 104-124.000.
Paton, H. Neil; and Skilling, John B. Depressed center spine piggyback-/container railcar. 4,274,776, Cl. 410-57.000.
Patterson, Gene L., to Dayco Corporation. Transmission testing machine and method. 4,274,278, Cl. 73-7.000.
Paul Troester Maschinenfabrik: *See*—
Focht, Harry, 4,275,283, Cl. 219-10.55F.
Pauling and Company Limited: *See*—
Linton, Derek; and Boydell, John M., 4,274,242, Cl. 52-741.000.
Paulson, Thomas M.: *See*—
Huber, Daniel L.; Paulson, Thomas M.; and Williams, James M., 4,274,752, Cl. 400-477.000.
Paurat, Friedrich W.; and Paurat, Roland. Shaft-sinking apparatus with milling head and central worm conveyor. 4,274,675, Cl. 299-31.000.
Paurat, Roland: *See*—
Paurat, Friedrich W.; and Paurat, Roland, 4,274,675, Cl. 299-31.000.
Pechmann, Karl: *See*—
Mackey, E. Scudder; and Pechmann, Karl, 4,275,147, Cl. 430-527.000.
Peck, Almo E. Lock for sliding windows and doors. 4,274,666, Cl. 292-257.000.
Pedersen, Carl O., to J. I. Case Company. Automatic hydraulic shut-off system. 4,274,328, Cl. 91-445.000.

Peeples, Denny L., to General Motors Corporation. Hydraulic booster with back pressure control. 4,274,326, Cl. 91-49.000.

Pegg, Charles E.: *See—*
Beck, Christian A.; Jurkowski, Walter J.; and Pegg, Charles E., 4,274,362, Cl. 118-657.000.

Peguform-Werke GmbH: *See—*
Kluss, Hans; and Lampic, Janez, 4,274,668, Cl. 293-142.000.

Penner, Horst: *See—*
de Groot, Willem J.; Penner, Horst; Schmied, Irene; and Weber, Peter, 4,274,662, Cl. 285-21.000.

Pennwalt Corporation: *See—*
Popoff, Ivan C.; Mailey, Everett A.; and Haines, Paul G., 4,275,014, Cl. 260-780.000.

Penny, Samuel L., to Dresser Industries, Inc. Rock bit lubrication system utilizing expellable plug for obtaining expansion space. 4,274,498, Cl. 175-228.000.

Pereira Da Luz, Artur. Manufacture of aminoglycoside antibiotics. 4,275,155, Cl. 435-80.000.

Permo: *See—*
Le Dall, Guy, 4,275,448, Cl. 364-500.000.

Peroni, Peter A., to LaFrance Corporation. Instrument housing. 4,274,545, Cl. 220-4.00R.

Perry Oceanographics, Inc.: *See—*
Schmidt, Thomas C.; and Yemington, Charles R., 4,274,405, Cl. 128-205.260.

Perry, Richard R.; Maran, Anthony G.; and Schols, Anton G. Rendering systems. 4,275,036, Cl. 422-286.000.

Persohn, Thomas F.: *See—*
Andresen, Harvey E.; and Persohn, Thomas F., 4,274,841, Cl. 55-40.000.

Persson, Anders E.: *See—*
Liljekvist, Bernt S.; and Persson, Anders E., 4,274,496, Cl. 175-57.000.

Pertl, Don L., to Western Automation Corporation. Method of smoothing flat goods. 4,274,215, Cl. 38-144.000.

Peter, Heinz: *See—*
Pfeifer, Josef; and Peter, Heinz, 4,275,239, Cl. 564-511.000.

Peters, Margot Elizabeth: *See—*
Peters, Melville F.; and Peters, Walter T., 4,274,396, Cl. 126-438.000.

Peters, Melville F.; and Peters, Walter T., to Peters, Walter Todd; Peters, Margot Elizabeth; and Kronman, Albert F. Structural solar energy collector. 4,274,396, Cl. 126-438.000.

Peters, Robert: *See—*
Schulte, Klaus; and Peters, Robert, 4,275,033, Cl. 422-133.000.

Peters, Walter T.: *See—*
Peters, Melville F.; and Peters, Walter T., 4,274,396, Cl. 126-438.000.

Peters, Walter Todd: *See—*
Peters, Melville F.; and Peters, Walter T., 4,274,396, Cl. 126-438.000.

Peters, Werner: *See—*
Janssen, Klaus; Peters, Werner; and Schilling, Hans-Dieter, 4,274,941, Cl. 208-8.00R.

Peters, William H. Automatic watering device. 4,274,365, Cl. 119-78.000.

Peterson, Harold B. Foldable device for transporting farm implements. 4,274,492, Cl. 172-285.000.

Peterson, William A., to Bell Telephone Laboratories, Incorporated. Converter bleeder circuit responsive to flux condition of filter inductor. 4,275,436, Cl. 363-47.000.

Petitpierre, Jean C.; and Burri, Peter, to Ciba-Geigy Corporation. Carbazolylmethane compounds. 4,275,005, Cl. 260-315.000.

Petree, Harris E.; and Nabors, James B., to Ciba-Geigy Corporation. Process for the preparation of cyclopropylmethyl-n-propylamine. 4,275,238, Cl. 564-446.000.

Petrick, Detlef, to Bonumwerke Tigges & Winckel GmbH & Co. KG. Perforating device. 4,274,202, Cl. 30-365.000.

Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,275,191, Cl. 528-423.000.

Pfeifer, Josef; and Peter, Heinz, to Ciba-Geigy Corporation. 1,10-Dialkyl-1,10-decamethylenediamines. 4,275,239, Cl. 564-511.000.

Philip Morris Incorporated: *See—*
Lendvay, Andrew T., 4,274,427, Cl. 131-293.000.

Philips Petroleum Company: *See—*
Drake, Charles A.; and Williams, Ralph P., 4,275,237, Cl. 564-306.000.

Phillips Petroleum Company: *See—*
Eddy, William R., 4,274,534, Cl. 198-479.000.
Hawley, Gil R., 4,274,996, Cl. 260-45.90R.
Hedges, James H.; and Glinsmann, Gilbert R., 4,274,488, Cl. 166-273.000.
Hutson, Thomas, Jr., 4,275,257, Cl. 585-738.000.
Huxley, Edward E.; and Nash, Martin E., 4,275,218, Cl. 549-87.000.
Meister, John J., 4,274,279, Cl. 73-55.000.

Phillips, Raymond J., to Alexander Shand Services Limited. Machine comprising a rotatable boom assembly. 4,274,796, Cl. 414-690.000.

Phos Incorporated: *See—*
Moolenaar, Jules, 4,274,206, Cl. 33-178.00B.

Pickering, Michael V. Ninhydrin reagent for use in amine and amino acid analyses. 4,274,833, Cl. 23-230.00B.

Pierce, Richard H.: *See—*
Canfield, Sheldon A.; Pierce, Richard H.; and Rapp, Kenneth L., 4,275,297, Cl. 250-239.000.

Pierrel S.p.A.: *See—*
Riva, Mario; and Toscano, Luciano, 4,275,061, Cl. 424-243.000.

Pietsch, Wolfgang: *See—*
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.

Pines, Michael Y.: *See—*
Maeding, Dale; and Pines, Michael Y., 4,275,315, Cl. 307-221.00D.

Pirio, Marcel R.: *See—*
Singh, Prithipal; and Pirio, Marcel R., 4,275,160, Cl. 435-188.000.

Pitney Bowes, Inc.: *See—*
Beck, Christian A.; Jurkowski, Walter J.; and Pegg, Charles E., 4,274,362, Cl. 118-657.000.

Pitzmann, Gregor, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Pivotable hatchback for a streamlined rear of an automobile. 4,274,670, Cl. 296-1.00S.

Plancqueel, Guy; and Toth, Irme, to Societe Metallurgique le Nickel -S.L.N. Process for making ferro-nickel shot for electroplating and shot made thereby. 4,274,940, Cl. 204-294.000.

Plaquevent, Jean-Christophe: *See—*
Duhamel, Lucette; and Plaquevent, Jean-Christophe, 4,275,217, Cl. 548-344.000.

Pleibel, William; and Stolen, Rogers H., to Bell Telephone Laboratories, Incorporated. Polarization-preserving optical fiber. 4,274,854, Cl. 65-2.000.

Pochron, Sharon P.: *See—*
Gargiulo, Robert J.; Mitchell, Gary A.; Hudson, Patricia M.; Pochron, Sharon P.; Huseby, Rolf M.; and Smith, Robert E., 4,275,153, Cl. 435-13.000.

Pogoda, Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Lacquer coated metal surface. 4,274,887, Cl. 148-31.500.

Pogorski, Louis A.; and Kuehn, Lorne A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Evacuated diving suit insulation. 4,274,158, Cl. 2-2.10R.

Pollak, Robert R., to United Technologies Corporation. Control for start-up of a gas turbine engine. 4,274,255, Cl. 60-39.14R.

Poly-Glas Systems: *See—*
Goelz, David W., 4,274,512, Cl. 188-65.100.

Polysar Limited: *See—*
Kent, Eric G., 4,274,983, Cl. 260-4.00R.

Polyvend Inc.: *See—*
Johnston, Max M., 4,275,393, Cl. 340-688.000.

Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Radial carcass tire, particularly for earth-moving equipment employing carcass expansion limiting block. 4,274,464, Cl. 152-352.00R.

Poole, Donald R.: *See—*
Mars, James E.; Poole, Donald R.; Schmidt, Eckart W.; and Wang, Charles, 4,274,893, Cl. 149-2.000.

Popoff, Ivan C.; Mailey, Everett A.; and Haines, Paul G., to Pennwalt Corporation. N-(Oxazolidinothio) imides that provide scorch retardant nonblooming elastomeric compositions. 4,275,014, Cl. 260-780.000.

Potter, Jerry L., to Xerox Corporation. Magnification/demagnification apparatus and method. 4,275,450, Cl. 364-515.000.

Power Engineering and Manufacturing, Ltd.: *See—*
Herscovici, Saul, 4,274,302, Cl. 74-661.000.

Poythress, Richard L.: *See—*
Sanders, John R.; Poythress, Richard L.; Shultz, Richard E.; Buholtz, William F.; and Fedder, Richard C., 4,274,361, Cl. 118-653.000.

PPG Industries, Inc.: *See—*
Buechler, Peter R.; Parker, Earl E.; and Mollohan, Kenneth L., 4,274,992, Cl. 260-32.80R.
Claassen, George R.; and Mickelic, Raymond J., 4,274,858, Cl. 65-273.000.
Cunningham, Hugh, 4,274,928, Cl. 204-98.000.
Frey, William I.; and Beestrice, William R., 4,274,856, Cl. 65-24.000.
Hazel, John G.; and Steiger, Roger A., 4,275,026, Cl. 264-67.000.
May, Russell R., Jr., 4,275,025, Cl. 264-63.000.
Wolfe, Terry L., 4,274,857, Cl. 65-26.000.

Price, Robert L.: *See—*
Bartkus, Edward A.; and Price, Robert L., 4,275,107, Cl. 428-220.000.

Priddy, Duane B., to Dow Chemical Company, The. Process for the preparation of improved styrene acrylic acid copolymers. 4,275,182, Cl. 526-109.000.

Priest, James D., to Belden Corporation. Guide device for use in elongate filament dispensing package and the like. 4,274,607, Cl. 242-163.000.

Pringle, William L., to United States Steel Corporation. Heat exchanger. 4,274,186, Cl. 29-157.30D.

Pritchard, Malcolm G.: *See—*
Burley, Joseph W.; Hope, Peter; and Pritchard, Malcolm G., 4,274,999, Cl. 260-45.75S.

Prober, Maurice: *See—*
MacKenzie, Burton T., Jr.; Prober, Maurice; and Kiersztyn, Stanley E., 4,274,990, Cl. 260-29.15B.

Procter & Gamble Company, The: *See—*
Corkill, John M.; Madison, Bryan L.; and Burns, Michael E., 4,274,975, Cl. 252-140.000.
Flora, Lawrence; and Francis, Marion D., 4,275,059, Cl. 424-204.000.
Gregg, Richard, 4,275,085, Cl. 426-433.000.

Proctor, Sidney E., to Pars Engineering Company Limited. Mineral cutter pick arrangement. 4,274,677, Cl. 299-92.000.

Productronix, Inc.: *See—*
Budraitis, Tadas; and Seliga, Gerald W., 4,274,282, Cl. 73-862.640.
Produits Chimiques Ugine Kuhlmann: *See—*
Belfort, Gerard L.A.; and Richer, Daniel P. A., 4,274,831, Cl. 8-532.000.
Lecoq, Jean-Claude; and Grimaud, Edouard, 4,274,969, Cl. 210-721.000.
Progressive Equipment, Inc.: *See—*
Swanson, Kenneth P., 4,274,179, Cl. 19-245.000.
Projektierung Chemische Verfahrenstechnik GmbH: *See—*
Puls, Jurgen; Sinner, Michael; and Dietrichs, Hans-Hermann, 4,275,159, Cl. 435-175.000.
Prokic-Immel, Ricarda: *See—*
Becher, Heinz-Manfred; Sehring, Richard; Wirtz, Walter; and Prokic-Immel, Ricarda, 4,275,077, Cl. 424-322.000.
Proni, Oscar, to Coulter Electronics, Inc. Liquid dispenser. 4,274,552, Cl. 222-61.000.
Przedsiebiorstwo Wdrazania i Upowszechniania Postepu Technicznego i Organizacyjnego "Posteor": *See—*
Bednarski, Stanislaw, 4,275,019, Cl. 261-98.000.
Pugh, William A. G.; Edmunds, Robert I.; Mansell, Peter B.; Brechin, Robert; and Langton, Hubert A., to CPG Products Corp. Toy figure having movable limb members. 4,274,224, Cl. 46-161.000.
Puls, Jurgen; Sinner, Michael; and Dietrichs, Hans-Hermann, to Projektierung Chemische Verfahrenstechnik GmbH. Process for the production of xylose by enzymatic hydrolysis of xylan. 4,275,159, Cl. 435-175.000.
Punches, James R.: *See—*
Starr, James A.; and Punches, James R., 4,274,205, Cl. 33-174.00L.
Purgold, Gerald C., to United States of America, National Aeronautics and Space Administration. Automated syringe sampler. 4,274,285, Cl. 73-683.310.
Purvis, Robert D. Solids and liquid separating apparatus. 4,274,963, Cl. 210-320.000.
Putnam, Paul S.; Cowgill, Charles F.; and Di Bella, Frank J. Mechanized stand handling apparatus for drilling rigs. 4,274,778, Cl. 414-22.000.
Quashem, Abul: *See—*
Joy, Michael; Moon, Richard E.; Quashem, Abul; Lo, Alex; and Dayal, Vijay S., 4,274,162, Cl. 3-1.300.
Queiser, Horst; and Meichsner, Othmar, to Kraftwerk Union Aktiengesellschaft. Apparatus for treating radioactive concentrates. 4,274,962, Cl. 210-257.100.
Questor Corporation: *See—*
Molitor, Robert P., 4,274,637, Cl. 273-235.00R.
Quinlan, Patrick M., to Petrolite Corporation. Polymerization of aromatic nitrogen heterocyclic compounds. 4,275,191, Cl. 528-423.000.
Quinlan, Robert W.: *See—*
Urban, Raymond C.; and Quinlan, Robert W., 4,275,109, Cl. 428-273.000.
Quinn, Clayton B.; and Wilson, Charles A., II, to General Electric Company. Continuous process for producing halogenated polycarbonates and the polycarbonates obtained therefrom. 4,275,187, Cl. 528-174.000.
Quinton Instrument Co.: *See—*
Tam, Hak W.; and Modes, Vernon E., 4,274,419, Cl. 128-639.000.
R. Scaran, Inc.: *See—*
Scaran, Robert T., 4,274,393, Cl. 126-123.000.
Raab, Harald; and Weissenberger, Helmuth, to Fichtel & Sachs AG. Clutch disc. 4,274,525, Cl. 192-106.200.
Rabeneck, Kenneth H.; Kantlehner, Jerry R.; and Gallaher, David E. Packaged sealed-end tubular thermoplastic net bagging. 4,274,539, Cl. 206-554.000.
Racal Communications Equipment: *See—*
Gill, Kenneth E.; and Hilling, Anthony E., 4,275,360, Cl. 330-276.000.
Racz, Janos A.; and Seppi, Edward J., to General Electric Company. Tomographic scanning apparatus with ionization detector means. 4,275,305, Cl. 250-445.00T.
Radiometer A/S: *See—*
Vesterager, Peter K. R.; and Jeppesen, Borge, 4,274,418, Cl. 128-635.000.
Radtke, Alfred G. Book stand. 4,274,616, Cl. 248-459.000.
Rahm, Joseph A.: *See—*
Waldman, Joseph L.; Klein, Edgar; Kulling, Achim; and Rahm, Joseph A., 4,275,041, Cl. 423-82.000.
Rall, Dieter; Hornbaker, David R.; and Sawyer, William W. Control apparatus for regulating building perimeter temperature change system. 4,274,475, Cl. 165-12.000.
Rao, V. Durga Nageswar, to Ford Motor Company. Wave compressor turbocharger. 4,274,811, Cl. 417-64.000.
Rapp, Kenneth L.: *See—*
Canfield, Sheldon A.; Pierce, Richard H.; and Rapp, Kenneth L., 4,275,297, Cl. 250-239.000.
Raschig, G.m.b.H.: *See—*
Braun, Roland, 4,275,018, Cl. 261-94.000.
Ratcliff Tail Lifts Limited: *See—*
Franklin, Leslie C., 4,274,172, Cl. 14-69.500.
Ratcliffe, Ronald W.; and Salzmann, Thomas N., to Merck & Co., Inc. Process for preparing 7-(1-hydroxyethyl)-3-(2-aminoethylthio)-1-carbadethiaceph-3-em-3-carboxylic acid and intermediate therefor. 4,275,207, Cl. 546-183.000.
Rath, Gero: *See—*
Bardenheuer, Friedrich; Konig, Horst; Junker, Alois; and Rath, Gero, 4,274,867, Cl. 75-13.000.
Ratton, Serge; and Botannet, Bernard, to Rhone-Poulenc Industries. Preparation of aromatic azoamines by diazotization/coupling/rearrangement of aromatic amines. 4,275,003, Cl. 260-205.000.
Rau, Peter: *See—*
Jung, Wilfried; and Rau, Peter, 4,274,921, Cl. 176-78.000.
Raupp, Arthur J., Jr.; Gerasin, Michael N.; and Thompson, M. Leonard, to Valeron Corporation, The. Cutter assembly for broaching. 4,274,766, Cl. 407-15.000.
Ravallo, Robert J.: *See—*
Colten, Frank P.; Halik, Joseph J.; Ravallo, Robert J.; Hegadorn, Joseph L.; and Hynson, Richard B., 4,275,083, Cl. 426-96.000.
Raychem Limited: *See—*
Clarke, Raymond, 4,275,180, Cl. 525-173.000.
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Hays, Herbert G.; and Sweitzer, Ralph W., 4,274,581, Cl. 237-7.000.
RCA Corporation: *See—*
Angle, Rodney L., 4,274,193, Cl. 29-571.000.
Datta, Pabitra, 4,275,100, Cl. 369-286.000.
Dieterich, Charles B., 4,275,416, Cl. 358-147.000.
Farmer, Felta C., Jr.; and Knight, Donald P., 4,275,347, Cl. 323-312.000.
Harford, Jack R., 4,275,362, Cl. 330-283.000.
Knapp, William K., 4,275,316, Cl. 307-279.000.
Miller, Edward A., 4,275,282, Cl. 219-10.49R.
Schwarzmann, Alfred, 4,275,366, Cl. 333-161.000.
Siryj, Bohdan W.; and Moore, Loren D., 4,274,294, Cl. 74-89.150.
Wang, Chih C.; Ekstrom, Lincoln; Lausman, Thomas C.; and Wielicki, Henry, 4,275,101, Cl. 369-286.000.
Recordati S.A.: *See—*
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Rector, James L.; and Weber, Paul R., to Du Pont de Nemours, E. I., and Company. Scraped wall agitator. 4,274,751, Cl. 366-310.000.
Redmond, William C. Weed extraction apparatus. 4,274,619, Cl. 254-132.000.
Reed, Kingstone L. H.: *See—*
Reed, Michael A.; Hatcher, Ian; Reed, Kingstone L. H.; and Danchuk, William, 4,274,262, Cl. 62-3.000.
Reed, Michael A.; Hatcher, Ian; Reed, Kingstone L. H.; and Danchuk, William, to Koolatron Industries, Limited. Thermoelectric jug cooler and control circuit. 4,274,262, Cl. 62-3.000.
Rees, Thomas C.: *See—*
Schneider, Charles A.; and Rees, Thomas C., 4,274,997, Cl. 260-45.75W.
Reeves Brothers, Inc.: *See—*
Wegner, Gunter H., 4,275,171, Cl. 521-107.000.
Regal, John: *See—*
Kuyper, Herman S.; Evers, Robert S.; and Regal, John, 4,274,469, Cl. 160-107.000.
Regimbal, Richard R.: *See—*
Becker, Floyd W.; and Regimbal, Richard R., 4,274,663, Cl. 285-24.000.
Rehder, Gunther; and Rusdea, Johann, to Orthoplant Orthopadische Implantate GmbH & Co. KG. Endoprosthesis for a hip joint, especially for the hip joint of a human being. 4,274,164, Cl. 3-1.913.
Reimer, Hans-Joachim: *See—*
Grimminger, Hermann; and Reimer, Hans-Joachim, 4,274,499, Cl. 177-1.000.
Reiner, Josef, to Herbert Schwind GmbH & Co. KG. Method and apparatus for the projection of optical test objects. 4,274,715, Cl. 351-30.000.
Reinhart, Robert F.: *See—*
Corbin, Raymond L.; and Reinhart, Robert F., 4,274,243, Cl. 52-748.000.
Reist, Walter; and Honegger, Werner, to Ferag AG. Method and apparatus for stacking printed products continuously arriving in a substantially fish scale overlapping arrangement. 4,274,623, Cl. 271-217.000.
Remy, David C., to Merck & Co., Inc. Antipsychotic pharmaceutical compositions of the levorotatory enantiomers of 3-methoxycyproheptadine and an analog thereof. 4,275,070, Cl. 424-267.000.
Renko, George, to Gibbs & Hill, Inc. Water-cooled nuclear reactor with passive emergency shutdown and core cooling capability and on-line refueling. 4,274,920, Cl. 176-30.000.
Repinski, Bernard. Clamping device. 4,274,314, Cl. 82-36.00R.
Republic Steel Corporation: *See—*
Mahar, Kevin D., 4,274,923, Cl. 201-39.000.
Resnicow, Herbert. Shaft-mounted assembly. 4,274,323, Cl. 411-433.000.
Revell, Incorporated: *See—*
Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., 4,274,225, Cl. 46-227.000.
Reyes, Jose. Turbo plate vaporizer. 4,274,386, Cl. 123-591.000.
Rhoads, Jack L. Stratified cross combustion engine. 4,274,369, Cl. 123-53.00A.
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Bargain, Michel; and Lefort, Marcel, 4,275,184, Cl. 528-26.000.
Gruffaz, Max; and Micaelli, Odile, 4,275,228, Cl. 560-247.000.
Ratton, Serge; and Botannet, Bernard, 4,275,003, Cl. 260-205.000.
Richard, Samuel J., Jr. Precision gas pressure regulation. 4,274,440, Cl. 137-613.000.
Richard Wolf GmbH: *See—*
Zobel, Jurgen, 4,274,704, Cl. 350-10.000.
Richards, Donald K., to General Battery Corporation. Electric storage battery container. 4,275,131, Cl. 429-163.000.

Richer, Daniel P. A.: *See*—
Belfort, Gerard L.A.; and Richer, Daniel P. A., 4,274,831, Cl. 8-532.000.
Richfield, Steven E. Permanently lubricated bearing. 4,274,684, Cl. 308-36.100.
Riegler, Ernst; and Schmidt, Manfred, to Voest-Alpine Aktiengesellschaft. Shielded roller chain. 4,274,536, Cl. 198-851.000.
Rieter Machine Works, Ltd.: *See*—
Vetterli, Walter, 4,274,604, Cl. 242-43.00R.
Riew, Changkiu K., to B. F. Goodrich Company, The. Reactive terminally unsaturated liquid polymers in unsaturated polyesters. 4,274,994, Cl. 260-40.00R.
Riker Laboratories, Inc.: *See*—
Hammar, Walton J.; and Rustad, Mark A., 4,275,221, Cl. 560-53.000.
Ringwood, Alfred E., to Australian National University, The. Treatment of high level nuclear reactor wastes. 4,274,976, Cl. 252-301.10W.
Rippel, Wally E.; and Edwards, Dean B., to California Institute of Technology. Bipolar battery construction. 4,275,130, Cl. 429-144.000.
Rissmann, Heinz-Bernd: *See*—
Roth, Mario; Pagel, Werner; Rissmann, Heinz-Bernd; and Happich, Karl-Christoph, 4,274,792, Cl. 414-564.000.
Ritterman, Paul F.; and Sparks, Richard H., to TRW Inc. Sealed nickel-cadmium battery with self-regulating precharge adjustment capability. 4,275,127, Cl. 429-50.000.
Riva, Mario; and Toscano, Luciano, to Pierrel S.p.A. Steroids and process for preparing the same. 4,275,061, Cl. 424-243.000.
Rizzo, Joseph F., to Bell Telephone Laboratories, Incorporated. Automatically adjustable bidirectional-to-unidirectional transmission network. 4,275,276, Cl. 179-170.00D.
Rizzo, Olympio C. Machine for assembling elastic bulbs to fragile tubular elements. 4,274,194, Cl. 29-717.000.
Robert Bosch GmbH: *See*—
Harer, Helmut; and Juhasz, Josef, 4,275,351, Cl. 324-427.000.
Muller, Bernt; and Theden, Ulrich, 4,275,406, Cl. 357-26.000.
Schleupen, Richard, 4,275,340, Cl. 318-280.000.
Wilfert, Thomas; Babitzka, Rudolf; and Schlagmuller, Walter, 4,274,598, Cl. 239-585.000.
Wunsch, Steffen, 4,274,642, Cl. 279-62.000.
Robertshaw Controls Company: *See*—
Branson, Charles D.; and Shopsky, Harvey J., 4,274,546, Cl. 220-4.00B.
Schmidt, David J., 4,275,464, Cl. 371-15.000.
Robertson, John A.: *See*—
Burnett, James E.; and Robertson, John A., 4,275,401, Cl. 346-75.000.
Robins, Robert R. Vehicle bumper step. 4,274,648, Cl. 280-166.000.
Robinson, Lee F., to RTL Contactor Holding S.A. Separation of minerals. 4,274,948, Cl. 209-9.000.
Robinson, Martin A.: *See*—
Friedland, David J.; Tewksbury, Floyd L.; and Robinson, Martin A., 4,275,037, Cl. 423-8.000.
Rochat, Charles-Louis. Slide projector. 4,274,719, Cl. 353-103.000.
Rocket Research Company: *See*—
Mars, James E.; Poole, Donald R.; Schmidt, Eckart W.; and Wang, Charles, 4,274,893, Cl. 149-2.000.
Rockwell International Corporation: *See*—
Eshghy, Siavash, 4,274,188, Cl. 29-240.000.
Friedman, Joseph; Oberg, Carl L.; and Russell, Larry H., 4,275,034, Cl. 422-194.000.
Johnson, Richard F.; and Wiers, John W., 4,274,657, Cl. 280-803.000.
Tittmann, Bernhard R.; and Ahlberg, Lloyd A., 4,274,288, Cl. 73-602.000.
White, Stanley A., 4,275,452, Cl. 364-726.000.
Winget, Wayne A., 4,275,358, Cl. 330-109.000.
Roedel, Ronald J.: *See*—
Cassiday, Daniel R.; Keramidas, Vassilis G.; Roedel, Ronald J.; and Saul, Robert H., 4,275,404, Cl. 357-19.000.
Roediger, Hanns E., to Techtransfer GmbH. Apparatus for dissolving air in water and subsequent reduction of the water surface tension in flotation systems. 4,274,959, Cl. 210-221.200.
Rogers, Thurmond J., Jr. Fishing lure. 4,274,220, Cl. 43-35.000.
Rohrer, Robert L., to Textron, Inc. Apparatus for sewing slide fastener chain to article panels. 4,274,347, Cl. 112-104.000.
Rollins, Ralph T., to Graybill, Clinton. Ring controlled variable venturi downdraft carburetor. 4,275,017, Cl. 261-53.000.
Rolscreen Company: *See*—
Kuyper, Herman S.; Evers, Robert S.; and Regal, John, 4,274,469, Cl. 160-107.000.
Root, Barbara A. Whelper structure. 4,274,363, Cl. 119-1.000.
Rosania, Lawrence J.: *See*—
Woznicki, Edward J.; Rosania, Lawrence J.; and Marshall, Keith, 4,274,830, Cl. 8-495.000.
Rosenbaum, Georges: *See*—
Bouillon, Claude; and Rosenbaum, Georges, 4,275,199, Cl. 542-430.000.
Rosenfield, Richard E.; and Kochwa, Shaul, to Mt. Sinai School of Medicine of the City University of New York. Blood cell typing and compatibility test procedure. 4,275,053, Cl. 424-12.000.
Ross, Walter C. J., to National Research Development Corporation. Peptide macromolecular complexes. 4,275,000, Cl. 260-112.00R.
Roth, Mario; Pagel, Werner; Rissmann, Heinz-Bernd; and Happich, Karl-Christoph, to Saint Gobain Industries. Apparatus for the automatic unfastening of glass sheets suspended from pincer-like gripping machines. 4,274,792, Cl. 414-564.000.
Rothman, Leonard A., to Du Pont de Nemours, E. I., and Company. Preparation of 1-piperidine-carbodithioic acid piperidinium salt. 4,275,208, Cl. 546-189.000.
Rouse, Carl A.; and Simnad, Massoud T., to United States of America, Energy. Nuclear reactor shield including magnesium oxide. 4,274,922, Cl. 176-87.000.
Roushdy, Hesham A., to Ford Motor Company. Transmission throttle valve actuator for an automatic transmission. 4,274,305, Cl. 74-865.000.
Rowe, V. Lopez. Vehicle drinking apparatus. 4,274,566, Cl. 224-35.000.
Roy, Della M.: *See*—
Langton, Christine A.; and Roy, Della M., 4,274,881, Cl. 106-98.000.
Roy, Donald A.; O'Keefe, George F.; and Kutelis, Carl R., to Textron, Inc. Crank press blank holder and stripper mechanism. 4,274,316, Cl. 83-23.000.
RTL Contactor Holding S.A.: *See*—
Robinson, Lee F., 4,274,948, Cl. 209-9.000.
Rudner, Bernard; and Stone, Herman, to Tenneco Chemicals, Inc. Intumescent flexible polyurethane foam having incorporated into the reaction mixture an aliphatic aldehyde. 4,275,169, Cl. 521-99.000.
Rueggeberg, Werner, to Armstrong Cork Company. Corona discharge device. 4,275,301, Cl. 250-326.000.
Ruger, Dean L., to International Telephone and Telegraph Corporation. Drive block structure for an adjustable vehicle seat track. 4,274,293, Cl. 74-89.150.
Ruhle, Wolfgang: *See*—
Marrello, Vincent; Onton, Aare; and Ruhle, Wolfgang, 4,275,336, Cl. 315-246.000.
Ruhrchemie Aktiengesellschaft: *See*—
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,275,242, Cl. 568-463.000.
Ruiz, Pierre, to Framatome. Method of regulation of the water level in boilers or steam generators. 4,275,447, Cl. 364-494.000.
Rumianca S.p.A.: *See*—
Messori, Vittorio; Francese, Renato; and Esposito, Roberto, 4,275,204, Cl. 544-204.000.
Rusdea, Johann: *See*—
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Russell, Buel O. Method of threading a lacing needle. 4,274,565, Cl. 223-102.000.
Russell, Larry H.: *See*—
Friedman, Joseph; Oberg, Carl L.; and Russell, Larry H., 4,275,034, Cl. 422-194.000.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming and treating kinky fibers from glass. 4,274,855, Cl. 65-2.000.
Russo, Neil: *See*—
Chan, Kingsley; and Russo, Neil, 4,274,615, Cl. 248-343.000.
Rustad, Mark A.: *See*—
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Ruti Machinery Works Ltd.: *See*—
Freisler, Erhard; Lutz, Friedrich; and Zollinger, Hans, 4,274,449, Cl. 139-449.000.
Rutzen, Horst: *See*—
Giede, Wolfgang; and Rutzen, Horst, 4,275,235, Cl. 564-288.000.
Ruyak, Robert F., to Autoclave Engineers, Inc. Magnetically actuated rising stem valve. 4,274,444, Cl. 137-630.140.
Ryan, John L., to EMI Limited. Arrangements for constructing representations of parts of bodies. 4,275,444, Cl. 364-414.000.
Rylewski, Eugeniusz M. Rotative machine for fluids. 4,274,814, Cl. 418-15.000.
Rysti, Alpo. Method and apparatus for packing timber. 4,274,781, Cl. 414-83.000.
Ryu, Ji-Yong, to UOP Inc. Process for preparing high surface area aluminas. 4,275,052, Cl. 423-628.000.
Sabao, Masato: *See*—
Kodama, Yujiro; Kuroishi, Nobuhito; Sabao, Masato; and Kureha, Yasumasa, 4,274,876, Cl. 75-243.000.
Sachs-Systemtechnik GMbH: *See*—
Lutz, Dieter; Krause, Peter; Terveen, Axel; and Eibl, Volker, 4,274,425, Cl. 128-719.000.
Saegusa, Takashi: *See*—
Fukuhara, Toru; and Saegusa, Takashi, 4,274,721, Cl. 354-31.000.
Saint Gobain Industries: *See*—
Roth, Mario; Pagel, Werner; Rissmann, Heinz-Bernd; and Happich, Karl-Christoph, 4,274,792, Cl. 414-564.000.
Saito, Minoru: *See*—
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.
Saito, Osamu; Shimizu, Jozo; and Zaitsu, Hiroshi, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,275,113, Cl. 428-323.000.
Saito, Toshihiro; Arai, Shoji; and Tsutsumi, Yukihiro, to Toyo Soda Manufacturing Co., Ltd. Process for producing hydroxybutyraldehyde. 4,275,243, Cl. 568-496.000.
Saitou, Tadashi: *See*—
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,274,817, Cl. 418-133.000.
Saitou, Tsuyoshi; and Ito, Tsuneo, to Hitachi, Ltd. MOS decoder logic circuit having reduced power consumption. 4,275,312, Cl. 307-463.000.

Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Notary vane pump with inlet and discharge ports in end sealing plates. 4,274,817, Cl. 418-133.000.
Sakamoto, Takashi; and Itooka, Akira. Linear interpolator for color correction. 4,275,413, Cl. 358-80.000.
Sakurai, Kiyomi, to Nippon Paint Co., Ltd. Photopolymer intaglio printing plate. 4,275,143, Cl. 430-307.000.
Sakurai, Sadaaki; Takashima, Mitsuru; and Ugaji, Masana, to Sony Corporation. Diaphragm for a loudspeaker. 4,275,278, Cl. 179-181.00F.
Sakuyama, Shigeru: *See*—
Kurono, Masayasu; Nakai, Hisao; and Sakuyama, Shigeru, 4,275,075, Cl. 424-305.000.
Salamon, Nicholas L.: *See*—
Ervin, James K.; and Salamon, Nicholas L., 4,274,191, Cl. 29-408.000.
Salisbury, John A., deceased: *See*—
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased, 4,274,254, Cl. 60-39.030.
Salisbury, Judith M., administratrix: *See*—
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased, 4,274,254, Cl. 60-39.030.
Salmon, Jean, to Jeumont-Schneider. Device for the detection of the position of a railway vehicle. 4,274,611, Cl. 246-34.00R.
Salzman, Noah: *See*—
Hahn, Robert H.; Hahn, Neva N.; and Salzman, Noah, 4,274,413, Cl. 128-303.130.
Salzmann, Thomas N.: *See*—
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Samsonite Corporation: *See*—
Winter, Roger D.; and Sarbell, John P., 4,274,569, Cl. 224-319.000.
Sanders, James M.: *See*—
Mussinan, Cynthia J.; Mookherjee, Braja D.; Vock, Manfred H.; Schmitt, Frederick L.; Shuster, Edward J.; Sanders, James M.; Light, Bette M.; and Granda, Edward J., 4,275,080, Cl. 426-3.000.
Sanders, John R.; Poythress, Richard L.; Shultz, Richard E.; Buholtz, William F.; and Fedder, Richard C., to Burroughs Corporation. Electrostatic and magnetic transfer enhancing apparatus for conducting and magnetically attracting toner. 4,274,361, Cl. 118-653.000.
Sandmann, Harald: *See*—
Hartinger, Edmund; Julke, Elias; and Sandmann, Harald, 4,274,971, Cl. 210-778.000.
Sandvik Aktiebolag: *See*—
Liljekvist, Bernt S.; and Persson, Anders E., 4,274,496, Cl. 175-57.000.
Sano, Ichiro, to Furukawa Denchi Kabushiki Kaisha. Cover apparatus for monoblock storage battery. 4,275,128, Cl. 429-88.000.
Sanyo Electric Co., Ltd.: *See*—
Ohshima, Masauki, 4,274,217, Cl. 40-451.000.
Saperstein, Zalman P.: *See*—
Cottone, Andrew J.; and Saperstein, Zalman P., 4,274,483, Cl. 165-153.000.
Sarbell, John P.: *See*—
Winter, Roger D.; and Sarbell, John P., 4,274,569, Cl. 224-319.000.
Sasaki, Isao: *See*—
Kamada, Kazumasa; Sasaki, Isao; and Kushi, Kenji, 4,274,933, Cl. 204-159.240.
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, to Fujitsu Limited. Method of manufacturing insulated gate semiconductor devices by high pressure thermal oxidation with water vapor. 4,275,093, Cl. 427-89.000.
Sasdi, Laszlo: *See*—
Dobos, Alajos; Kiss, Gyula; Jony nee Acs, Julia; Sasdi, Laszlo; and Bisits nee Zsilinszky, Vilma, 4,274,597, Cl. 239-542.000.
Satmer, Franz: *See*—
Hofmann, Franz; and Satmer, Franz, 4,274,360, Cl. 118-303.000.
Sato, Hiroshi: *See*—
Shimizu, Hiroshi; Sato, Hiroshi; Miura, Nobuo; and Inada, Shuzo, 4,275,023, Cl. 264-50.000.
Sato Koki Company, Ltd.: *See*—
Igarashi, Sigemi, 4,274,723, Cl. 354-33.000.
Sato, Tadashi; Yoshimura, Shigeru; and Ichikawa, Kiyomichi, to Canon Kabushiki Kaisha. Dual-mode sheet sorting apparatus. 4,274,624, Cl. 271-292.000.
Sato, Tadashi: *See*—
Takahashi, Tohru; Sato, Tadashi; and Kishi, Hirotoshi, 4,275,423, Cl. 358-285.000.
Saul, Robert H.: *See*—
Cassiday, Daniel R.; Keramidas, Vassilis G.; Roedel, Ronald J.; and Saul, Robert H., 4,275,404, Cl. 357-19.000.
Savage, Erle B., Jr., to Ionic Controls, Inc. Support for decorative and communicative material. 4,275,112, Cl. 428-310.000.
Sawada, Daisaku: *See*—
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.
Sawaguchi, Hiroshi: *See*—
Obara, Kunio; Kohno, Tohru; and Sawaguchi, Hiroshi, 4,274,874, Cl. 75-231.000.
Sawyer, Patricia F. Shopping cart organizer. 4,274,567, Cl. 224-42.430.
Sawyer, William W.: *See*—
Rall, Dieter; Hornbaker, David R.; and Sawyer, William W., 4,274,475, Cl. 165-12.000.
Scaggs, Orville C. Subterranean well pipe guiding apparatus. 4,274,777, Cl. 414-22.000.
Scala, Thomas L., Jr., to Finetex, Inc. Benzoate ester compositions. 4,275,222, Cl. 560-103.000.
Scapa Dryers, Inc.: *See*—
Westhead, William T., 4,274,448, Cl. 139-383.00A.
Scaran, Robert T., to R. Scaran, Inc. Fireplace assembly. 4,274,393, Cl. 126-123.000.
Scarlett, John A., to Med Pump, Inc. Fluid injection system. 4,274,407, Cl. 128-213.00R.
Schaad, Jean, to Ebauches S.A. Electronic timepiece. 4,275,462, Cl. 368-88.000.
Schaaf, Cecil F.; and Schaaf, Craig R. Walking cane apparatus. 4,274,430, Cl. 135-65.000.
Schaaf, Craig R.: *See*—
Schaaf, Cecil F.; and Schaaf, Craig R., 4,274,430, Cl. 135-65.000.
Schaefer Equipment Inc.: *See*—
Cale, Roland E., 4,274,277, Cl. 72-356.000.
Schaller, Helmut F. k. Pivotal and releasable strap coupling. 4,274,181, Cl. 24-201.00A.
Schank, Richard L.: *See*—
Chu, Joseph Y. C.; Schank, Richard L.; and Tutihasi, Simpei, 4,275,133, Cl. 430-31.000.
Schedewie, Franz: *See*—
Makosch, Gunter; Schedewie, Franz; Schmackpfeffer, Arno; and Ziller, Jorg, 4,275,288, Cl. 219-121.0LR.
Schilling, Hans-Dieter: *See*—
Janssen, Klaus; Peters, Werner; and Schilling, Hans-Dieter, 4,274,941, Cl. 208-8.00R.
Schirmer, Henry G.: *See*—
Mueller, Walter B.; Schirmer, Henry G.; Schoenberg, Julian H.; and Weinberg, Alan S., 4,274,900, Cl. 156-229.000.
Schlaap-Mobel GmbH & Co., KG: *See*—
Lange, Gerd, 4,274,756, Cl. 403-382.000.
Schlagmuller, Walter: *See*—
Wilfert, Thomas; Babitzka, Rudolf; and Schlagmuller, Walter, 4,274,598, Cl. 239-585.000.
Schleger, Siegfried: *See*—
Benker, Fritz; Credner, Hans-Heinrich; Lassig, Wolfgang; Meier, Ernst; and Schleger, Siegfried, 4,275,200, Cl. 544-137.000.
Schleupen, Richard, to Robert Bosch GmbH. Control circuit for a final control element, in particular an electric motor. 4,275,340, Cl. 318-280.000.
Schmackpfeffer, Arno: *See*—
Makosch, Gunter; Schedewie, Franz; Schmackpfeffer, Arno; and Ziller, Jorg, 4,275,288, Cl. 219-121.0LR.
Schmauch, Hugo: *See*—
Weber, Heinrich; Dungs, Horst; Beckmann, Franz; Schmauch, Hugo; and Flasch, Karl-Heinz, 4,274,924, Cl. 202-255.000.
Schmelzer, Christoph; Spohr, Reimar; Krumme, Jens-Peter; Witter, Klaus; and Heitmann, Heinrich, to U.S. Philips Corporation. Magnetic memory layer. 4,274,935, Cl. 204-192.00M.
Schmidt, David J., to Robertshaw Controls Company. Universal self-diagnosing appliance control. 4,275,464, Cl. 371-15.000.
Schmidt, Eckart W.: *See*—
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Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,275,087, Cl. 426-538.000.
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Schulten, Rudolf; Behr, Friedrich; and Wenzl, Helmut, to Kernforschungsanlage Julich GmbH. Apparatus for the production of hydrogen and oxygen. 4,274,938, Cl. 204-239.000.
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Schurmann, Josef H., to Texas Instruments Deutschland GmbH. H.F. amplifier. 4,275,361, Cl. 330-277.000.
Schwarzmann, Alfred, to RCA Corporation. Phase shifter. 4,275,366, Cl. 333-161.000.
Schwob, Pierre, to SEB S.A. Steam dispenser, for domestic use, for skin care. 4,274,588, Cl. 239-138.000.
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Nadkarni, Anil V., 4,274,873, Cl. 75-211.000.
Scott, Frank B., Jr. Surgical retractor utilizing elastic tubes frictionally held in spaced notches. 4,274,398, Cl. 128-20.000.
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Seki, Nagataka; and Watanabe, Yukio, to Tokyo Shibaura Electric Co., Ltd. DV/DT Protection circuit device for gate turn-off thyristor. 4,275,430, Cl. 361-91.000.
Sekiguchi, Mitsuo, to Alps Electric Co., Ltd. Filter for microwaves. 4,275,369, Cl. 333-209.000.
Self, Freddy R. Aircraft traffic pattern computer. 4,274,204, Cl. 33-1.0SD.
Seliga, Gerald W.: *See*—
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Sellars, Albert E., to International Standard Electric Corporation. Submarine cable. 4,275,262, Cl. 174-128.00R.
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Fischer, Wolf E., 4,274,441, Cl. 137-614.050.
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Demange, Michel; and Septier, Louis, 4,274,871, Cl. 75-134.00M.
Severen, Randall D.: *See*—
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Shaffer, Donald J. Tuneable intake manifold. 4,274,368, Cl. 123-52.00M.
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Shainoff, John R., to Cleveland Clinic Foundation, The. Glyoxal agarose. 4,275,196, Cl. 536-115.000.
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Shannon, Joseph W., to American Beverage Control. Beverage dispenser pumping system. 4,274,557, Cl. 222-136.000.
Shariff, Rafique S., to International Business Machines Corporation. Cryogenic chip removal technique. 4,274,576, Cl. 228-264.000.
Shaw, Christopher W., to Micro Metalsmiths Limited. Model locomotives. 4,274,337, Cl. 105-99.000.
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Bannon, Robert P., 4,274,944, Cl. 208-352.000.
Sherex Chemical Company, Inc.: *See*—
Earl, Gary W.; and Hickman, Howard M., 4,275,236, Cl. 564-298.000.
Sherif, Sherif A.; and Hachtmann, James E., to Magnesium Elektron Inc. Process for preparing dilute aqueous copper zirconium ammonium carbonate solutions containing less than about 0.5% Cu and 1.5% ZrO_2. 4,274,972, Cl. 252-8.600.
Sherman, Anthony M., to Mobil Oil Corporation. Poly(p-methylstyrene) polyblend. 4,275,179, Cl. 525-98.000.
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Shida, Masami: *See*—
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Shimelman, Myer B.: *See*—
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Shindo, Yoshio; and Ito, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission with overdrive. 4,274,303, Cl. 74-740.000.
Shippert, Ronald D., to Denver Splint Company, The. Nose splint. 4,274,402, Cl. 128-89.00R.
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Shires, Donald. Water cooling system for air cooled air conditioners. 4,274,266, Cl. 62-171.000.
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Shriver, Frank L., to Coors Container Company. Protective coating for cans and methods for application of coating thereto. 4,275,097, Cl. 427-286.000.
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Sibley, Lincoln L., Jr.: *See—*
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Siegal, Richard G. Operator readable and machine readable character recognition system. 4,275,381, Cl. 340-146.30Z.
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Blaess, Gerhard, 4,275,446, Cl. 364-487.000.
Heywang, Walter; Guntersdorfer, Max; and Kleinschmidt, Peter, 4,275,390, Cl. 340-554.000.
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Krueger, Hans, 4,274,713, Cl. 350-347.00R.
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Sikkema, Bruce H.: *See—*
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Silberberg, Joseph, to Stauffer Chemical Company. Filled polyolefin compositions having improved thermal stability. 4,274,995, Cl. 260-42.140.
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Sims, Gerald S., to B. F. Goodrich Company, The. Inflatable structures of rubberized fabric. 4,274,526, Cl. 193-25.00B.
Sims, Raymond B., to Delta Materials Research Limited. Electrical overload circuit breaker. 4,275,370, Cl. 335-37.000.
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Vogel, John D., 4,275,371, Cl. 335-272.000.
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Skatvold, Arthur R., Jr., to United States of America, Navy. Resonant element transformer. 4,275,364, Cl. 333-33.000.
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Sloan, Kenneth B.: *See—*
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Smit, Edward H., to Sukup Manufacturing Co. Grain stirrer drive assembly. 4,274,750, Cl. 366-261.000.
Smith, Clay D.; and Keller, Douglas V., Jr., to Otisca Industries, Ltd. Agglomeration type coal recovery processes. 4,274,946, Cl. 209-5.000.
Smith International, Inc: *See—*
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Smith, Russell G., to Xomox Corporation. Wafer-type swing check valve construction. 4,274,436, Cl. 137-515.700.
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Sneider, Vincent R. Flexible syringe with nozzle closure. 4,274,555, Cl. 222-107.000.
Snel, Martinus A., to Nautamix B. V. Method of preparing dry mixtures in powder form from polyvinylchloride, lubricating agents and stabilizers, and the manufacture of objects therefrom. 4,274,988, Cl. 260-23.0XA.
Snyder, Lloyd R., to Technicon Instruments Corporation. Chromatographic apparatus and method. 4,274,967, Cl. 210-659.000.
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Sorin, Andrei. Board game computing device. 4,275,443, Cl. 364-410.000.

Soulliard, Charles, to Midian Electronics, Inc. Sub-miniature radio telephone decoder. 4,275,271, Cl. 179-2.0EB.

Soum, Rene. Concrete floor slab constructed from basic prefabricated slabs. 4,274,240, Cl. 52-583.000.

Southeastern Foam Products, Inc.: *See—*
Montgomery, Robert L.; and Smith, Stuart B., 4,274,818, Cl. 425-4.00R.

Southern Chemicals Limited: *See—*
O'Riordain, Diarmuid, 4,274,238, Cl. 52-408.000.

Southland Instruments, Inc.: *See—*
Lee, Peter F., 4,274,453, Cl. 141-1.000.

Spangler, Charles E.: *See—*
Yang, Wen C.; Spangler, Charles E.; Morris, Joe P.; and Keairns, Dale L., 4,275,353, Cl. 324-454.000.

Sparks, Richard H.: *See—*
Ritterman, Paul F.; and Sparks, Richard H., 4,275,127, Cl. 429-50.000.

Sparro, Francesco: *See—*
Gerber, Alfred; and Sparro, Francesco, 4,274,367, Cl. 123-52.00A.

Spector, George: *See—*
Ferguson, Arthur; and Spector, George, 4,274,645, Cl. 280-47.260.
Hughes, Tommy L.; and Spector, George, 4,274,508, Cl. 182-116.000.

Spence, Adam M.; and Goff, James R., to Winster Engineering Limited. Mining equipment. 4,274,765, Cl. 405-303.000.

Spengler, Hans; and Stoof, Klaus, to VEB Kombinat Pumpen und Verdichter. High-pressure centrifugal pump unit. 4,274,803, Cl. 415-70.000.

Speros, Dimitri M.: *See—*
Cho, Chong I.; Zukowski, Edward C.; and Speros, Dimitri M., 4,275,330, Cl. 313-218.000.

Sperry Corporation: *See—*
Gaglione, Stanley; and Hanley, Gerard L., 4,275,367, Cl. 333-164.000.
Lustig, Claude D., 4,274,742, Cl. 356-350.000.

Spohr, Albert R.: *See—*
Gallanis, George P.; Spohr, Albert R.; and Lube, Robert R., 4,274,199, Cl. 30-34.100.

Spohr, Reimar: *See—*
Schmelzer, Christoph; Spohr, Reimar; Krumme, Jens-Peter; Witter, Klaus; and Heitmann, Heinrich, 4,274,935, Cl. 204-192.00M.

Sporer, Bernhard. Assembly apparatus, particularly for the assembly of components upon carrier plates. 4,274,195, Cl. 29-741.000.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,275,251, Cl. 568-817.000.

Springer, Helmut: *See—*
Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,275,242, Cl. 568-463.000.

Sproles, Michael Andrew: *See—*
Doerge, Gail W., 4,274,450, Cl. 140-82.000.

Stablex A.G.: *See—*
Chappell, Christopher L., 4,274,880, Cl. 106-90.000.

Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture and copying material produced therefrom. 4,275,139, Cl. 430-192.000.

Staiger, Hans: *See—*
Burkhardt, Friedrich; and Staiger, Hans, 4,274,773, Cl. 409-221.000.

STAL-LAVAL Apparat AB: *See—*
Stendahl, Gunnar, 4,274,478, Cl. 165-104.160.

Stanciu, Virgil V.; Cutler, Robert A.; and Kasper, Kenneth R., to Tempcraft Tool & Mold Inc. Wax injection molding apparatus and control system. 4,274,823, Cl. 425-145.000.

Standard Brands Incorporated: *See—*
Dougan, Ernest V., 4,275,082, Cl. 426-92.000.

Standard Oil Company (Indiana): *See—*
Grutsch, James F.; Mallatt, Russell C.; and Walk, Joe D., 4,274,968, Cl. 210-666.000.
Hollingsworth, Frank H.; Jenkins, George R.; Kirkpatrick, John W.; and Mower, Lawrence N., 4,274,487, Cl. 166-261.000.

Standiford, Natalie C. Bed covering having tuckable portion. 4,274,169, Cl. 5-502.000.

Stanek, Oldrich: *See—*
Festag, Werner; Muller, Hans-Ueli; and Stanek, Oldrich, 4,274,541, Cl. 206-613.000.

Stanley, James M.: *See—*
Sieving, Alfred W.; and Stanley, James M., 4,274,680, Cl. 303-6.00A.

Stannett, Vivian: *See—*
Williams, Joel; Dunn, Terry; and Stannett, Vivian, 4,274,932, Cl. 204-159.200.

Stanton, James H.; and Garvin, Donald F., to Diversey Corporation, The. Aqueous water-soluble soap lubricant concentrates and aqueous lubricants containing same. 4,274,973, Cl. 252-34.700.

Starr, James A.; and Punches, James R., to General Electric Company. Measuring fixture. 4,274,205, Cl. 33-174.00L.

Stauffer Chemical Company: *See—*
Silberberg, Joseph, 4,274,995, Cl. 260-42.140.

Steelastic Company, The: *See—*
Kiemer, Ralph F., 4,274,821, Cl. 425-114.000.

Steiger, Roger A.: *See—*
Hazel, John G.; and Steiger, Roger A., 4,275,026, Cl. 264-67.000.

Stein, Werner; and Christophliemk, Peter, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold- und Silber Scheideanstalt vormals Roessler. Process for the preparation of fine droplet-reacted aluminosilicates of the smallest particle size. 4,275,048, Cl. 423-329.000.

Steinmetz, Richard J.: *See—*
Grocki, Wayne; and Steinmetz, Richard J., 4,275,338, Cl. 315-381.000.

Stendahl, Gunnar, to STAL-LAVAL Apparat AB. Apparatus for cooling dust-containing gas. 4,274,478, Cl. 165-104.160.

Stengard, Charles, to Valmet Oy. Gas nozzle for use in treating material webs. 4,274,210, Cl. 34-156.000.

Sterling Drug Inc.: *See—*
Collins, Joseph C., 4,275,201, Cl. 544-171.000.
Crounse, Nathan N.; and Schmidt, Paul J., 4,275,121, Cl. 428-537.000.
Schmidt, Paul J.; and Mo-Wei Hung, William, 4,274,660, Cl. 282-27.500.

Sterling Winthrop Group Limited: *See—*
Cartwright, Jeffery, 4,274,884, Cl. 134-4.000.

Sternick, Leon; and Lea, John D., to United States of America, Navy. Parallel digital beam-forming system. 4,275,461, Cl. 367-122.000.

Stevens, Karl W.: *See—*
Adams, Robert L., Jr.; Grant, Carl H.; and Stevens, Karl W., 4,275,440, Cl. 364-200.000.

Stewart, Robert D., to Occidental Research Corporation. Extraction process using solid stabilized emulsions. 4,274,956, Cl. 210-638.000.

Stewart-Warner Corporation: *See—*
Ireland, Robert G.; and Tramontini, Vernon N., 4,274,481, Cl. 165-122.000.

Stewart, William M. Universal bit apparatus. 4,274,246, Cl. 54-6.00R.

Stiefel, Frank J., to Carter-Wallace Inc. Method for preparing basic dithienyl compounds. 4,275,198, Cl. 542-414.000.

Stinton, Robert T.: *See—*
Long, Richard W.; and Stinton, Robert T., 4,274,759, Cl. 405-186.000.

Stirniman, Robert P., to Induction Heating International, Inc. Induction heating inverter. 4,275,438, Cl. 363-136.000.

Stokes, Anthony D., to University of Sydney, The. Gas recovery of sulphur hexafluoride. 4,274,851, Cl. 62-40.000.

Stolen, Rogers H.: *See—*
Pleibel, William; and Stolen, Rogers H., 4,274,854, Cl. 65-2.000.

Stone, Herman: *See—*
Rudner, Bernard; and Stone, Herman, 4,275,169, Cl. 521-99.000.

Stoof, Klaus: *See—*
Spengler, Hans; and Stoof, Klaus, 4,274,803, Cl. 415-70.000.

Stork, Gilbert: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,275,087, Cl. 426-538.000.

Strassler, Sigfrid: *See—*
Buxbaum, Charley; Gessinger, Gernot; and Strassler, Sigfrid, 4,275,123, Cl. 428-547.000.

Strauss, Edgar H.: *See—*
Langen, Marinus J. M.; and Strauss, Edgar H., 4,274,245, Cl. 53-558.000.

Stresing, Kurt O., to General Electric Company. Fluorescent lamp unit. 4,275,331, Cl. 313-318.000.

Stromberg, Robert P., to United States of America, Energy. Electromechanical solar tracking apparatus. 4,274,394, Cl. 126-425.000.

Struger, Odo J.; and Branc, Joseph R., to Allen-Bradley Company. Input circuit for digital control systems. 4,275,307, Cl. 250-551.000.

Struthers, Ralph C., to Universal Fuel Systems, Inc. Fuel cell. 4,275,125, Cl. 429-29.000.

Struve, Roger L. Inhaler. 4,274,403, Cl. 128-203.150.

Sudar, Robert B.; Lewis, Edward L.; and Koppel, Albert W., to Canadian Patents & Dev. Ltd. Sea water conductivity cell. 4,275,352, Cl. 324-449.000.

Sudo, Toshio: *See—*
Kishi, Atsuo; and Sudo, Toshio, 4,274,813, Cl. 417-269.000.

Suematsu, Masayuki; Mogi, Takao; and Taki, Akira, to Sony Corporation. Pulse width modulating circuit. 4,275,354, Cl. 328-58.000.

Sugahara, Koichi: *See—*
Ashizaki, Shigeya; Muranishi, Hideo; and Sugahara, Koichi, 4,275,332, Cl. 313-414.000.

Sugano, Kazuhiko: *See—*
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,307, Cl. 74-869.000.
Iwanaga, Kazuyoshi; Sugano, Kazuhiko; and Ohtsuka, Kunio, 4,274,308, Cl. 74-869.000.

Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, to Nissan Motor Company, Limited. Combined split engine and closed

loop mixture control operation with enriched fuel during partial cylinder mode. 4,274,373, Cl. 123-440.000.

Sugasawa, Fukashi; Iizuka, Haruhiko; and Matsumoto, Junichiro, to Nissan Motor Company, Limited. Apparatus for performing stepwise reactivation of cylinders of an internal combustion engine upon deceleration. 4,274,382, Cl. 123-481.000.

Sugita, Junkichi; and Fuse, Yuzo, to Sony Corporation. Public address system. 4,275,269, Cl. 179-1.0FS.

Sugiura, Muneharu; and Minami, Setsuo, to Canon Kabushiki Kaisha. Copying apparatus with stationary original support table and novel imaging lens system. 4,274,733, Cl. 355-60.000.

Sukup Manufacturing Co.: *See—*
Smit, Edward H., 4,274,750, Cl. 366-261.000.

Suld, George: *See—*
Schneider, Abraham; Myers, Harry K., Jr.; and Suld, George, 4,275,254, Cl. 585-14.000.

Sulzer Brothers Limited: *See—*
Seifert, Eberhard; and John, Philippe, 4,274,447, Cl. 139-97.000.

Sumegi, Robert B.: *See—*
Jansen, Harvey B.; Adams, Milton R.; Sumegi, Robert B.; Huber, Klaus K. G.; and Salisbury, John A., deceased, 4,274,254, Cl. 60-39.030.

Sumitomo Chemical Company, Limited: *See—*
Kirino, Osamu; Hashimoto, Shunichi; Matsumoto, Hiroshi; and Oshio, Hiromichi, 4,274,862, Cl. 71-118.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kodama, Yujiro; Kuroishi, Nobuhito; Sabao, Masato; and Kureha, Yasumasa, 4,274,876, Cl. 75-243.000.
Mifune, Teruo; Noto, Keiji; Otsu, Yasuo; and Hagiwara, Kotaro, 4,274,185, Cl. 29-123.000.
Moriya, Michio, 4,274,511, Cl. 188-1.00A.

Sumitomo Metal Mining Co. Ltd.: *See—*
Ogawa, Kunio; and Iio, Hiromitsu, 4,274,785, Cl. 414-173.000.

Summers, William A.; and Longardner, Robert L. Peak power generation. 4,275,310, Cl. 290-1.00R.

Sun, Shan C.: *See—*
Church, Larry L.; and Sun, Shan C., 4,275,429, Cl. 361-64.000.

Sunbeam Corporation: *See—*
Gallanis, George P.; Spohr, Albert R.; and Lube, Robert R., 4,274,199, Cl. 30-34.100.

Sunshine, Richard B.; and Severen, Randall D., to Cona Company, Inc., The. Water propelled hover device. 4,274,591, Cl. 239-188.000.

Suntech, Inc.: *See—*
Schneider, Abraham; Myers, Harry K., Jr.; and Suld, George, 4,275,254, Cl. 585-14.000.

Surf-Jet Corporation: *See—*
Dawson, Edward S., 4,274,357, Cl. 114-270.000.

Sutton, Luther M. Vehicle mounted carriage and elevating apparatus. 4,274,788, Cl. 414-462.000.

Suzuki, Katsumi: *See—*
Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katsumi, 4,275,178, Cl. 525-71.000.

Suzuki, Kazuhiko: *See—*
Sone, Masazumi; Suzuki, Kazuhiko; and Fukumori, Yukitsugu, 4,274,843, Cl. 55-139.000.

Suzuki, Mikio: *See—*
Kawabata, Minoru; Suzuki, Mikio; and Takahashi, Kenji, 4,274,504, Cl. 180-143.000.

Suzuki, Shintaro; Iizuka, Sadao; Moriya, Yoshimi; and Omote, Yuichi, to Kanto Denka Kogyo Co., Ltd. Production of magnetic powder. 4,274,865, Cl. 75-0.5AA.

Suzuki, Tadao: *See—*
Yoshida, Tadao; and Suzuki, Tadao, 4,275,359, Cl. 330-251.000.

Suzuki, Yoshihiro; Kinoshita, Hiroo; and Akasaka, Naomi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Catalyst for purifying exhaust gas and the process for manufacturing thereof. 4,274,981, Cl. 252-438.000.

Svenska Utvecklingsaktiebolaget (SU) Swedish National Development Co.: *See—*
Bjaareklint, Ake B., 4,274,939, Cl. 204-257.000.

Svensson, Claes G. S.; Eriksson, Hans E. K.; and Lundgren, Rolf B., to Mo och Domsjo Aktiebolag. Process and apparatus for continuously conveying particulate compressible fibrous material from a zone at a first gas pressure to a zone at a second gas pressure. 4,274,786, Cl. 414-218.000.

Swanson, Kenneth P., to Progressive Equipment, Inc. Spinning frame apron clearer attachment. 4,274,179, Cl. 19-245.000.

Swartout, Bobbye J. Method for washing centrifugal analyzer test disks. 4,274,885, Cl. 134-21.000.

Swartz, Jerome. Harmony authorization detector synthesizer. 4,274,321, Cl. 84-1.030.

Sweitzer, Ralph W.: *See—*
Hays, Herbert G.; and Sweitzer, Ralph W., 4,274,581, Cl. 237-7.000.

Swiss Aluminium Ltd.: *See—*
Festag, Werner; Muller, Hans-Ueli; and Stanek, Oldrich, 4,274,541, Cl. 206-613.000.

Swoish, Raymond F.; and Astleford, John J., Jr., to Westinghouse Electric Corp. High-voltage single-shot circuit-protecting device with fuse-like characteristics and having a chemical operating mechanism. 4,275,431, Cl. 361-93.000.

Sybron Corporation: *See—*
Blair, James E., 4,274,954, Cl. 210-611.000.

Syva Company: *See—*
Litman, David J.; Harel, Zvi; and Ullman, Edwin F., 4,275,149, Cl. 435-7.000.
Singh, Prithipal; and Pirio, Marcel R., 4,275,160, Cl. 435-188.000.

Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Cyclodextrin-polyvinyl alcohol polymers and a process for the preparation thereof in a pearl, foil, fiber or block form. 4,274,985, Cl. 260-17.4ST.

Tachikawa, Kyoji; Tanaka, Yoshiaki; Yoshida, Yuji; and Asano, Toshihisa, to National Research Institute for Metals. Method for producing superconductors. 4,274,889, Cl. 148-133.000.

Tadokoro, Shin-ichi; and Segawa, Hirozo, to Kyowa Gas Chemical Industry Co., Ltd. Neutron shielding polymer composition and a process for producing the same. 4,275,174, Cl. 525-1.000.

Taga Electric Co., Ltd.: *See—*
Mishiro, Shoji; and Hamada, Seiji, 4,275,363, Cl. 331-4.000.

Tagami, Eijiro: *See—*
Hosaka, Yoshihiro; Harita, Yoshiyuki; Kurokawa, Mitsuo; Harada, Kunihiro; and Tagami, Eijiro, 4,275,142, Cl. 430-271.000.

Tagaya, Ryosaku: *See—*
Takahashi, Toshio; and Tagaya, Ryosaku, 4,274,745, Cl. 356-427.000.

Taig, Alistair G., to Bendix Corporation, The. Universal joint. 4,274,268, Cl. 64-7.000.

Tait, David A. G. A.C. Impedance measuring circuit with thermally controlled resistive element. 4,275,345, Cl. 323-363.000.

Tajano, Alberto: *See—*
Nardi, Dante; Tajano, Alberto; and Magistretti, Maria J., 4,275,071, Cl. 424-273.00R.

Takagi, Masatomo; Noritake, Tsuguo; and Ogaki, Mitsuo, to Tokyo Shibaura Henki Kabushiki Kaisha. Enclosed switchboard. 4,274,547, Cl. 220-4.00R.

Takagi, Mikio; Maeda, Mamoru; and Kamioka, Hajime, to Fujitsu Limited. Process for high pressure oxidation of silicon. 4,275,094, Cl. 427-93.000.

Takahashi, Hiroshi; Shibazaki, Etsuo; and Yamamoto, Yoshihito, to Sony Corporation. Mixing apparatus. 4,275,268, Cl. 179-1.00B.

Takahashi, Kenji: *See—*
Kawabata, Minoru; Suzuki, Mikio; and Takahashi, Kenji, 4,274,504, Cl. 180-143.000.

Takahashi, Masaaki; and Ito, Akira, to Kureha Kagaku Kogyo Kabushiki Kaisha. Radiation resistant oil and method of lubricating for atomic power facilities. 4,275,253, Cl. 585-7.000.

Takahashi, Tohru; Sato, Tadashi; and Kishi, Hirotoshi, to Canon Kabushiki Kaisha. Original reading device. 4,275,423, Cl. 358-285.000.

Takahashi, Toshio; and Tagaya, Ryosaku, to Eisai Co., Ltd. Method and apparatus for detecting foreign matters in liquids. 4,274,745, Cl. 356-427.000.

Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, to Morinaga Milk Industry Co., Ltd.; and Green Cross Corporation, The. HGI-Glycoprotein capable of stimulating proliferation and differentiation of human granulocyte, process for preparing same and leukopenia curative containing same. 4,275,056, Cl. 424-99.000.

Takashima, Mitsuru: *See—*
Sakurai, Sadaaki; Takashima, Mitsuru; and Ugaji, Masana, 4,275,278, Cl. 179-181.00F.

Takata, Juichiro. Vehicle occupant restraint system. 4,274,658, Cl. 280-804.000.

Takayama, Satoru: *See—*
Yamaguchi, Nobutana; Takayama, Satoru; Utumi, Masahiro; and Fujiyama, Masaaki, 4,275,108, Cl. 428-220.000.

Takeuchi, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Microprogram control system for microprogram debugging. 4,275,441, Cl. 364-200.000.

Taki, Akira: *See—*
Suematsu, Masayuki; Mogi, Takao; and Taki, Akira, 4,275,354, Cl. 328-58.000.

Takinami, Koichi: *See—*
Tanaka, Takashi; Ono, Eiji; and Takinami, Koichi, 4,275,011, Cl. 260-410.700.
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, 4,275,157, Cl. 435-115.000.

Talbot, Wilfred A. R. Apparatus for making shot. 4,274,819, Cl. 425-6.000.

Tam, Hak W.; and Modes, Vernon E., to Quinton Instrument Co. Skin preparation device and method used in the application of medical electrodes. 4,274,419, Cl. 128-639.000.

Tama, Tomeaki: *See—*
Kajino, Masayori; Yoshii, Takashi; and Tama, Tomeaki, 4,274,652, Cl. 280-460.00A.

Tamai, Shuichi; and Matsuyama, Norihide, to Osaka Nagayanagi Cork Ind., Co., Ltd. Apparatus for forming seal liners of thermoplastic material within closure cap shells. 4,274,822, Cl. 425-127.000.

Tamura, Shuichi; Niwa, Yukichi; Ogawa, Masahiko; Owada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Distance measuring device. 4,274,735, Cl. 356-1.000.

Tanaka, Takashi; Ono, Eiji; and Takinami, Koichi, to Ajinomoto Company, Incorporated. Method of producing improved glyceride by lipase. 4,275,011, Cl. 260-410.700.

Tanaka, Takehiko; Kubota, Yoji; and Kubomura, Kiyoshi, to Fujitsu Limited. Betting tickets selling and collecting system. 4,275,456, Cl. 364-900.000.

Tanaka, Yoshiaki: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; Yoshida, Yuji; and Asano, Toshihisa, 4,274,889, Cl. 148-133.000.

Tananier, John S.; and Martin, Jerry R., to Abbott Laboratories. 4,5-Carbamates of fortimicin B. 4,275,193, Cl. 536-17.00R.

Tang, Denny D.: *See—*
Silvestri, Victor J.; Tang, Denny D.; and Wiedmann, Siegfried K., 4,274,891, Cl. 148-175.000.

Tangonan, Gregory L., to Hughes Aircraft Company. Wavelength multiplexer/demultiplexer for optical circuits. 4,274,706, Cl. 350-96.190.

Tanigami, Yoshinori: *See*—
Kagami, Akiyasu; and Tanigami, Yoshinori, 4,275,333, Cl. 313-495.000.

Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. System for inputting information into digital control circuit means of a camera. 4,274,730, Cl. 354-289.000.

Tannetics, Inc.: *See*—
James, David H.; and Junco, Manuel F., 4,274,267, Cl. 62-252.000.

Taoka, Akira; and Uchida, Seiichi, to Bio Research Center Company, Ltd. Manufacture of fatty acids having straight and long carbon chains using a microorganism. 4,275,158, Cl. 435-136.000.

Tarbet, James K.: *See*—
White, Arnold G.; Tarbet, James K.; Vanness, Dennis A.; Woods, Gordon J.; and Micklethwaite, William F. H., 4,274,389, Cl. 125-21.000.

Tarozzi, Richard A.: *See*—
Medeiros, David E.; and Tarozzi, Richard A., 4,274,562, Cl. 222-401.000.

Tarpley, William B., Jr., to Energy and Minerals Research, Co. Process and apparatus for continuous discharge of material at localized damage point. 4,274,491, Cl. 169-46.000.

Tate & Lyle Limited: *See*—
Irvine, George D., 4,274,879, Cl. 106-39.500.

Tate, Takao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition control system for an internal combustion engine. 4,274,378, Cl. 123-421.000.

Taub, Ronald H. Display stand with three-sided base having partial rear wall. 4,274,613, Cl. 248-150.000.

Taylor, Frank E. Four wheeled hand truck. 4,274,644, Cl. 280-39.000.

Taylor Industries, Inc.: *See*—
Taylor, Philip W., 4,275,096, Cl. 427-230.000.

Taylor, Philip W., to Taylor Industries, Inc. Method and apparatus for dispensing fluid in a conduit. 4,275,096, Cl. 427-230.000.

Taylor, Richard J.: *See*—
Trump, Martin R.; Michael, Peter C.; and Taylor, Richard J., 4,275,418, Cl. 358-167.000.

Taylor, Robert A., to Lancer Boss Limited. Load carrying vehicles. 4,274,795, Cl. 414-673.000.

Taylor, Roy: *See*—
Grimshaw, Keith; and Taylor, Roy, 4,274,177, Cl. 19-99.000.

Tazaki, Kichiya: *See*—
Yamashita, Izumi; Fukuda, Kunio; and Tazaki, Kichiya, 4,274,998, Cl. 260-45.75B.

TBS, Inc.: *See*—
Simons, Peter B., 4,274,455, Cl. 141-1.000.

TDC-Technology Development Corporation: *See*—
French, Frederic A.; and French, Douglas A., 4,275,050, Cl. 423-445.000.

TEC Foam S.A.: *See*—
Luaces, Roman Y., 4,275,024, Cl. 264-51.000.

Technicon Instruments Corporation: *See*—
Snyder, Lloyd R., 4,274,967, Cl. 210-659.000.

Techtransfer GmbH: *See*—
Roediger, Hanns E., 4,274,959, Cl. 210-221.200.

Teetz, Volker: *See*—
Konig, Wolfgang; Teetz, Volker; Jager, Georg; and Geiger, Rolf, 4,275,001, Cl. 260-112.5LH.

Tektronix, Inc.: *See*—
Holznagel, Melvin A., 4,275,355, Cl. 328-124.000.

Teletype Corporation: *See*—
Hagstrom, Arthur A., 4,274,237, Cl. 52-312.000.

Tempcraft Tool & Mold Inc.: *See*—
Stanciu, Virgil V.; Cutler, Robert A.; and Kasper, Kenneth R., 4,274,823, Cl. 425-145.000.

Templin, Alan S., to TRW Inc. Dopant diffusion method of making semiconductor products. 4,274,892, Cl. 148-188.000.

Tenneco Chemicals, Inc.: *See*—
Rudner, Bernard; and Stone, Herman, 4,275,169, Cl. 521-99.000.

Teramoto, Kazuo: *See*—
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,275,156, Cl. 435-94.000.

Terdenge, Bernhard: *See*—
Zacharias, Theodor; and Terdenge, Bernhard, 4,274,274, Cl. 72-239.000.

Terveen, Axel: *See*—
Lutz, Dieter; Krause, Peter; Terveen, Axel; and Eibl, Volker, 4,274,425, Cl. 128-719.000.

Teshima, Kiyomi; Tsuboi, Toshio; and Kajitani, Yukimasa, to Mitsui Engineering and Shipbuilding Co., Ltd. Axial-flow turbine. 4,274,804, Cl. 415-121.00A.

Tewksbury, Floyd L.: *See*—
Friedland, David J.; Tewksbury, Floyd L.; and Robinson, Martin A., 4,275,037, Cl. 423-8.000.

Texas Instruments Deutschland GmbH: *See*—
Schurmann, Josef H., 4,275,361, Cl. 330-277.000.

Textron, Inc.: *See*—
Egner, Ronald J., 4,274,460, Cl. 411-83.000.
Ervin, James K.; and Salamon, Nicholas L., 4,274,191, Cl. 29-408.000.
Garner, Jimmy G.; and Guinn, Kenneth F., 4,274,808, Cl. 416-114.000.
Rohrer, Robert L., 4,274,347, Cl. 112-104.000.
Roy, Donald A.; O'Keefe, George F.; and Kutelis, Carl R., 4,274,316, Cl. 83-23.000.

Th. Goldschmidt AG: *See*—
Koerner, Gotz; and Fink, Hans-Ferdi, 4,274,977, Cl. 252-358.000.

Thackabeery, S. Paul: *See*—
Murphy, Clarence R.; Thackabeery, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., sole beneficiary, 4,274,917, Cl. 162-146.000.

Thalheim, Gerhard, to Sidco, SA. Apparatus for controlling a machine tool during the machining of a first workpiece to be matched with a second workpiece already machined. 4,274,230, Cl. 51-165.00R.

Theden, Ulrich: *See*—
Muller, Bernt; and Theden, Ulrich, 4,275,406, Cl. 357-26.000.

Thermacore, Inc.: *See*—
Eastman, George Y., 4,274,479, Cl. 165-104.260.

Thiele, Kurt; Ahmed, Quazi; Jahn, Ulrich; and Adrian, Rudolf, to Siegfried AG. Lipid lowering alkylene glycols and ester derivatives thereof. 4,275,068, Cl. 424-266.000.

Thiessen, Eldon D. Dual dispensing container. 4,274,556, Cl. 222-135.000.

Thomas & Betts Corporation: *See*—
Bethurum, Gary C., 4,274,197, Cl. 29-861.000.

Thominet, Georges M., to Compagnie Francaise des Petroles. Pipe joining device for underseas petroleum pipeline. 4,274,664, Cl. 285-24.000.

Thompson, Charles D.: *See*—
DiGregorio, David; McCarthy, Daniel; Mounteer, Keith J.; and Thompson, Charles D., 4,275,020, Cl. 261-111.000.

Thompson, M. Leonard: *See*—
Raupp, Arthur J., Jr.; Gerasin, Michael N.; and Thompson, M. Leonard, 4,274,766, Cl. 407-15.000.

Thomsen, Kenneth A.: *See*—
Alexander, William C.; Kirk, Richard L.; and Thomsen, Kenneth A., 4,275,376, Cl. 340-52.00R.

Thomson-Brandt: *See*—
Bricot, Claude; and Lehureau, Jean Claude, 4,275,275, Cl. 369-44.000.

Thomson-CSF: *See*—
Lehureau, Jean-Claude, 4,275,428, Cl. 360-113.000.

Thomson, Ronald E.; and Dombroski, Robert M., to Madison-Kipp Corporation. Electrical lubricating apparatus. 4,274,509, Cl. 184-15.00B.

Thurm, Siegfried; and Bunge, Konrad, to AGFA-Gevaert, A.G. Method and apparatus for making reproductions of color film frames. 4,274,732, Cl. 355-38.000.

Thyssen Industrie AG: *See*—
Block, Siegmar, 4,274,435, Cl. 137-508.000.

TII Corporation: *See*—
Napiorkowski, John, 4,275,432, Cl. 361-124.000.

Tisdale, Benjamin C., III; and Nicholson, William B., to Martech International, Inc. Method and apparatus for reeling pipeline. 4,274,799, Cl. 414-747.000.

Tittmann, Bernhard R.; and Ahlberg, Lloyd A., to Rockwell International Corporation. Method for measuring the depth of surface flaws. 4,274,288, Cl. 73-602.000.

TMC Corporation: *See*—
Himmetsberger, Alois; and Wittmann, Heinz, 4,274,653, Cl. 280-618.000.

Todd, John; and West, Gregory M. K. Helmet locking device. 4,274,271, Cl. 70-59.000.

Toenjes, Robert B., to Chamberlain Manufacturing Corporation. Obstruction sensor for electro-mechanically operated garage doors. 4,274,227, Cl. 49-28.000.

Tohgei, Ryoiku: *See*—
Sasaki, Nobuo; Kobayashi, Yasuo; Tohgei, Ryoiku; Iwai, Takashi; and Nakano, Motoo, 4,275,093, Cl. 427-89.000.

Tokas, Edward F., to Monsanto Company. Chemically reducing residual styrene monomer in styrene polymers and shaped products formed therefrom. 4,274,984, Cl. 260-4.0AR.

Tokico, Ltd.: *See*—
Kato, Tetuo; and Miura, Ieaki, 4,274,517, Cl. 188-315.000.

Tokosh, Richard; Barillo, Joseph; and Urban, Warren, to Lever Brothers Company. Novel process for the preparation of salts of alkanesulfonic acids. 4,275,013, Cl. 260-504.00R.

Tokuhara, Masaharu: *See*—
Yamada, Hisafumi; Tokuhara, Masaharu; and Kuriki, Choei, 4,275,420, Cl. 358-167.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kuwata, Ryuichi, 4,275,439, Cl. 364-120.000.
Nei, Hiromichi; Ohtani, Ryoichi; Ohshima, Iwao; and Horikawa, Yuji, 4,274,280, Cl. 73-61.0LM.
Takeuchi, Hiroshi, 4,275,441, Cl. 364-200.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Seki, Nagataka; and Watanabe, Yukio, 4,275,430, Cl. 361-91.000.

Tokyo Shibaura Henki Kabushiki Kaisha: *See*—
Takagi, Matomo; Noritake, Tsuguo; and Ogaki, Mitsuo, 4,274,547, Cl. 220-4.00R.

Tominaga, Akira; and Nishida, Reijiro, to Kansai Paint Co., Ltd. Cationic electrodepositable resin composition. 4,274,989, Cl. 260-29.2TN.

Tomonaga, Tetsuo, to Minolta Camera Kabushiki Kaisha. Electrophotographic $CdS.nCdCO_3$ containing manganese stearate. 4,275,135, Cl. 430-95.000.

Toolema AB: *See*—
Undin, Hans; and Wiener, Hans, 4,274,176, Cl. 15-341.000.

top-element Bauelemente fur Irnenausbau & Raumgestaltung GmbH & Co. KG: *See*—
Langenhorst, Gunter, 4,274,235, Cl. 52-213.000.
Toppan Printing Co., Ltd.: *See*—
Watanabe, Tadao, 4,275,106, Cl. 428-200.000.
Toray Industries, Inc.: *See*—
Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, 4,275,156, Cl. 435-94.000.
Torgersen, G. Earl: *See*—
Pater, Hendrik; and Torgersen, G. Earl, 4,274,336, Cl. 104-124.000.
Toro Company, The: *See*—
Hunter, Edwin J., 4,274,583, Cl. 239-1.000.
Tortorello, Anthony J.: *See*—
Mylonakis, Stamatios G.; and Tortorello, Anthony J., 4,275,229, Cl. 562-459.000.
Tosaka, Osamu; Ono, Eiji; Ishihara, Masaru; Morioka, Hajimu; and Takinami, Koichi, to Ajinomoto Company, Incorporated. Method for the production of L-lysine. 4,275,157, Cl. 435-115.000.
Toscano, Luciano: *See*—
Riva, Mario; and Toscano, Luciano, 4,275,061, Cl. 424-243.000.
Toth, Irme: *See*—
Plancqueel, Guy; and Toth, Irme, 4,274,940, Cl. 204-294.000.
Tottori Sanyo Electric Co., Ltd.: *See*—
Ohshima, Masauki, 4,274,217, Cl. 40-451.000.
Towne Robinson Fastener Company: *See*—
Jadach, Albert A., 4,275,285, Cl. 219-93.000.
Toyo Jozo Kabushiki Kaisha: *See*—
Misaki, Hideo; Horiuchi, Yoshifumi; Matsuura, Kazuo; and Harada, Saburo, 4,275,161, Cl. 435-190.000.
Toyo Pulp Co., Ltd.: *See*—
Kikuiri, Makoto; Nakashio, Yoshimi; Arai, Yasue; and Hidaka, Toshio, 4,274,913, Cl. 162-65.000.
Toyo Seikan Kaisha Ltd.: *See*—
Ito, Kazuo, 4,274,594, Cl. 239-327.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Saito, Toshihiro; Arai, Shoji; and Tsutsumi, Yukihiro, 4,275,243, Cl. 568-496.000.
Toyoda Koki Kabushiki K.: *See*—
Kawabata, Minoru; Suzuki, Mikio; and Takahashi, Kenji, 4,274,504, Cl. 180-143.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Haga, Minoru; and Kondo, Kunio, 4,274,774, Cl. 409-232.000.
Iwata, Toshiharu; Hattori, Tadashi; Mukainakano, Siniti; Goto, Kenji; and Sawada, Daisaku, 4,274,379, Cl. 123-425.000.
Kawabata, Minoru; Suzuki, Mikio; and Takahashi, Kenji, 4,274,504, Cl. 180-143.000.
Nakane, Mototaka, 4,274,524, Cl. 192-48.300.
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,274,817, Cl. 418-133.000.
Shindo, Yoshio; and Ito, Hiroshi, 4,274,303, Cl. 74-740.000.
Shirai, Akira; and Nagasawa, Sigeo, 4,274,258, Cl. 60-547.00R.
Suzuki, Yoshihiro; Kinoshita, Hiroo; and Akasaka, Naomi, 4,274,981, Cl. 252-438.000.
Tate, Takao, 4,274,378, Cl. 123-421.000.
Yokoi, Takeshi; and Yanagihara, Noritaka, 4,274,306, Cl. 74-866.000.
Tozuka, Masao: *See*—
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, 4,275,306, Cl. 250-548.000.
Tozzolino, Pierre: *See*—
Larribau, Etienne; and Tozzolino, Pierre, 4,274,950, Cl. 209-166.000.
Trabue, Gordon C., to Chemetron Process Equipment, Inc. Manually connectable flexible coupling. 4,274,269, Cl. 64-11.00R.
Tramontini, Vernon N.: *See*—
Ireland, Robert G.; and Tramontini, Vernon N., 4,274,481, Cl. 165-122.000.
Travaglio, Giuseppe. Strut for MacPherson-type suspensions for motor-vehicles. 4,274,654, Cl. 280-668.000.
Trefimetaux: *See*—
Fillie, Jean, 4,275,261, Cl. 174-73.00R.
Treuner, Uwe D.: *See*—
Breuer, Hermann; Denzel, Theodore; and Treuner, Uwe D., 4,275,062, Cl. 424-122.000.
Trochem (PTY) Limited: *See*—
Goold, Lionel A., 4,274,951, Cl. 209-167.000.
Trojer, Felix; and Briggs, John, to Battelle Memorial Institute. Method for manufacturing a panel of anisotropic ceramic glass. 4,275,102, Cl. 428-119.000.
Troxler, Eduard: *See*—
Orban, Ivan; and Troxler, Eduard, 4,275,211, Cl. 546-242.000.
True Temper Corporation: *See*—
Fee, Graham M., 4,274,582, Cl. 238-349.000.
Trump, Martin R.; Michael, Peter C.; and Taylor, Richard J., to Micro Consultants Limited. Video noise reduction systems. 4,275,418, Cl. 358-167.000.
Trumpf Maschinen AG: *See*—
Herb, Eugen; and Leibinger, Berthold, 4,274,801, Cl. 414-751.000.
TRW Inc.: *See*—
Davis, Paul W., Jr., 4,275,319, Cl. 310-43.000.
Dunn, William M.; and Hodge, Malcolm H., 4,274,572, Cl. 225-96.500.
Ritterman, Paul F.; and Sparks, Richard H., 4,275,127, Cl. 429-50.000.
Templin, Alan S., 4,274,892, Cl. 148-188.000.
Ts'Ao, Si-Ling. Telephone index for repertory dialer. 4,275,273, Cl. 179-90.00B.
Tsiang, Chong L.; and Koch, Robert O., to Colt Industries Operating Corp. Governor apparatus and system. 4,274,376, Cl. 123-360.000.
Tsuboi, Toshio: *See*—
Teshima, Kiyomi; Tsuboi, Toshio; and Kajitani, Yukimasa, 4,274,804, Cl. 415-121.00A.
Tsubusaki, Shigeru; Sonoda, Nobuo; and Shimotsuma, Wataru, to Matsushita Electric Industrial Co., Ltd. Electrographic recording medium with conductive layer containing metal oxide semiconductor. 4,275,103, Cl. 428-148.000.
Tsuchiya, Masuo: *See*—
Nakayama, Hiroyuki; Kato, Akira; and Tsuchiya, Masuo, 4,275,092, Cl. 427-54.100.
Tsuda, Yoshitaka; Sodeyama, Kaoru; and Tsunada, Naomasa, to Nissan Motor Company, Limited. Pressure control valve assembly for a fluid brake system. 4,274,681, Cl. 303-6.00C.
Tsujimoto, Kayoshi, to Minolta Camera Kabushiki Kaisha. Automatic focus control device for objective lens exchangeable cameras. 4,274,720, Cl. 354-25.000.
Tsunada, Naomasa: *See*—
Tsuda, Yoshitaka; Sodeyama, Kaoru; and Tsunada, Naomasa, 4,274,681, Cl. 303-6.00C.
Tsuno, Nobuo: *See*—
Minoura, Michinori; and Tsuno, Nobuo, 4,274,471, Cl. 164-87.000.
Tsuruha, Masayuki, to Matsushita Electric Industrial Co., Ltd. General purpose assembly machine. 4,274,800, Cl. 414-750.000.
Tsutsumi, Yukihiro: *See*—
Saito, Toshihiro; Arai, Shoji; and Tsutsumi, Yukihiro, 4,275,243, Cl. 568-496.000.
Tucker, Howard, to Imperial Chemical Industries Limited. βAdrenergic blocking alkanolamine derivatives. 4,275,058, Cl. 424-199.000.
Tucker, Richard O.: *See*—
Keith, Charles H.; and Tucker, Richard O., 4,274,914, Cl. 162-109.000.
Tudos, Ferenc: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, 4,274,985, Cl. 260-17.4ST.
Tuenkers GmbH: *See*—
Boguth, Kurt, 4,274,761, Cl. 405-232.000.
Tullis, Barclay J.: *See*—
Eineichner, Donald E.; and Tullis, Barclay J., 4,274,783, Cl. 414-134.000.
Tunstall, Karl N.; and Warren, M. L., to Otis Engineering Corporation. Valve. 4,274,432, Cl. 137-315.000.
Turner, Nelson R.: *See*—
Olligschlager, Rainer C.; and Turner, Nelson R., 4,274,646, Cl. 280-779.000.
Tutihasi, Simpei: *See*—
Chu, Joseph Y. C.; and Tutihasi, Simpei, 4,275,132, Cl. 430-31.000.
Chu, Joseph Y. C.; Schank, Richard L.; and Tutihasi, Simpei, 4,275,133, Cl. 430-31.000.
Tyler, Derek E.: *See*—
Yarwood, John C.; and Tyler, Derek E., 4,274,470, Cl. 164-49.000.
Ube Industries, Ltd.: *See*—
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,274,462, Cl. 152-209.00R.
Uchida, Seiichi: *See*—
Taoka, Akira; and Uchida, Seiichi, 4,275,158, Cl. 435-136.000.
Ugaji, Masana: *See*—
Sakurai, Sadaaki; Takashima, Mitsuru; and Ugaji, Masana, 4,275,278, Cl. 179-181.00F.
Uher, Edmond, to Delwing, Dieter. Anchor windlass. 4,274,620, Cl. 254-351.000.
Ullman, Edwin F.: *See*—
Litman, David J.; Harel, Zvi; and Ullman, Edwin F., 4,275,149, Cl. 435-7.000.
Ulrich, Klaus: *See*—
Schmidt, Gerhard; Noack, Christian; Ulrich, Klaus; Hanel, Volker; Kretschmar, Bernd; Kloth, Hans-Jochen; Pietsch, Wolfgang; Hesche, Peter; Eistert, Theodor; Oliva, Klaus; and Kreidler, Manfred, 4,274,247, Cl. 56-14.400.
Underwood, Johnny P.; and Bowden, Carl G. Electronic tic-tac-toe game. 4,275,442, Cl. 364-410.000.
Undin, Hans; and Wiener, Hans, to Toolema AB. Vacuum operated desoldering tool. 4,274,176, Cl. 15-341.000.
Union Camp Corporation: *See*—
Firth, William C., Jr., 4,274,860, Cl. 71-24.000.
Union Carbide Corporation: *See*—
Andresen, Harvey E.; and Persohn, Thomas F., 4,274,841, Cl. 55-40.000.
Barr, John B., 4,275,051, Cl. 423-447.400.
Barth, Bruce P.; Johnson, Robert N.; and Mayer, Walter P., 4,275,172, Cl. 521-112.000.
Berger, Mitchell H.; Matzner, Markus; and Gardner, Hugh C., 4,275,188, Cl. 528-193.000.
Kawakami, James H.; and Kwiatkowski, George T., 4,275,186, Cl. 528-174.000.
Kirkpatrick, Robert D.; and Weiler, David W., 4,275,021, Cl. 261-114.0JP.
United States of America
Agriculture: *See*—
Wicklow, Donald T.; and Detroy, Robert W., 4,275,167, Cl. 435-277.000.
Air Force: *See*—
Chino, John J., 4,275,263, Cl. 174-152.00R.

Massey, Dalton L., 4,274,612, Cl. 248-74.0PB.
Army: *See*—
Gallo, Benedict J., 4,275,163, Cl. 435-209.000.
Gutleber, Frank S., 4,275,397, Cl. 343-100.0CS.
Vig, John R.; and Brandmayr, Ronald J., 4,274,907, Cl. 156-637.000.
Energy: *See*—
Rouse, Carl A.; and Simnad, Massoud T., 4,274,922, Cl. 176-87.000.
Stromberg, Robert P., 4,274,394, Cl. 126-425.000.
Health, Education and Welfare: *See*—
Marquez, Victor E.; Liu, Paul S.; and Driscoll, John S., 4,275,057, Cl. 424-180.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Laudenslager, James B.; and Pacala, Thomas J. Pulse switching for high energy lasers. 4,275,317, Cl. 307-415.000.
National Aeronautics and Space Administration: *See*—
Elber, Wolf, 4,274,901, Cl. 156-242.000.
Purgold, Gerald C., 4,274,285, Cl. 73-683.310.
Wagner, Charles A., 4,275,453, Cl. 364-825.000.
Navy: *See*—
Foss, Rene N.; and Levine, Sidney, 4,274,353, Cl. 114-21.00A.
Jones, Louis F., 4,274,354, Cl. 114-244.000.
Lampton, Glen T., 4,274,333, Cl. 102-418.000.
Louie, Anthony C. H.; and Young, Stephen H., 4,275,421, Cl. 358-183.000.
Skatvold, Arthur R., Jr., 4,275,364, Cl. 333-33.000.
Sternick, Leon; and Lea, John D., 4,275,461, Cl. 367-122.000.
Zirbel, John P., 4,275,460, Cl. 367-102.000.
U.S. Philips Corporation: *See*—
Balzarini, Giovanni; Buccino, Giovanni; Gnadeberg, Jules; Papeschi, Roberto; and Slavich, Giancarlo, 4,275,451, Cl. 364-580.000.
Contant, Cornelis J., 4,275,412, Cl. 358-55.000.
Ferrieu, Gilbert M. M., 4,275,277, Cl. 179-170.0NC.
Lebailly, Jacques, 4,275,403, Cl. 357-17.000.
Lenders, Wilhelmus L. L.; and van Hirtum, Martinus J., 4,274,603, Cl. 242-7.140.
Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,275,091, Cl. 427-53.100.
Michel, Jean P.; Le Can, Claude J. P. F.; and van Buul, Marinus C. W., 4,275,386, Cl. 340-347.0AD.
Schmelzer, Christoph; Spohr, Reimar; Krumme, Jens-Peter; Witter, Klaus; and Heitmann, Heinrich, 4,274,935, Cl. 204-192.00M.
Varon, Jacques J., 4,274,890, Cl. 148-171.000.
United States Steel Corporation: *See*—
Pringle, William L., 4,274,186, Cl. 29-157.30D.
United Technologies Corporation: *See*—
Fishter, Robert E.; and Manty, Brian A., 4,274,908, Cl. 156-637.000.
Holmes, Trent H., 4,274,805, Cl. 415-138.000.
Horgan, John J., 4,274,261, Cl. 60-682.000.
McComas, Charles C.; Morris, James W.; and Sokol, Larry S., 4,275,090, Cl. 427-34.000.
McComas, Charles C.; Morris, James W.; and Sokol, Larry S., 4,275,124, Cl. 428-564.000.
Pollak, Robert R., 4,274,255, Cl. 60-39.14R.
Universal Fuel Systems, Inc.: *See*—
Struthers, Ralph C., 4,275,125, Cl. 429-29.000.
University of California, The Regents of the: *See*—
de la Plaza, Alejandro, 4,275,270, Cl. 179-1.0SC.
Malcom, Lawrence L.; and Convery, F. Richard, 4,274,163, Cl. 3-1.910.
University of Sydney, The: *See*—
Stokes, Anthony D., 4,274,851, Cl. 62-40.000.
UOP Inc.: *See*—
Anderson, Robert F., 4,275,032, Cl. 422-110.000.
Arena, Blaise J., 4,274,980, Cl. 252-430.000.
Barley, Geoffrey W., 4,274,516, Cl. 188-310.000.
Firth, Bruce E., 4,275,248, Cl. 568-781.000.
Firth, Bruce E., 4,275,249, Cl. 568-789.000.
Imai, Tamotsu; Homeier, Edwin H.; and Mackowiak, David E., 4,275,252, Cl. 568-909.000.
Ryu, Ji-Yong, 4,275,052, Cl. 423-628.000.
Vora, Bipin V., 4,275,255, Cl. 585-315.000.
Uozumi, Yukio, to Kawasaki Jukogyo Kabushiki Kaisha. Transversely adjustable suspension system. 4,274,338, Cl. 105-144.000.
Upjohn Company, The: *See*—
Braymer, George W., Jr.; and Diaz, Stephen H., 4,274,543, Cl. 215-6.000.
Bundy, Gordon L., 4,275,213, Cl. 548-240.000.
Kelly, Robert C.; and Wierenga, Wendell, 4,275,214, Cl. 548-243.000.
Morton, Douglas R., Jr., 4,275,197, Cl. 542-413.000.
Sih, John C., 4,275,008, Cl. 260-345.200.
Sih, John C., 4,275,231, Cl. 562-503.000.
Sih, John C., 4,275,232, Cl. 562-503.000.
Sih, John C., 4,275,233, Cl. 562-503.000.
Youngdale, Gilbert A., 4,275,069, Cl. 424-266.000.
Urban, Raymond C.; and Quinlan, Robert W., to General Electric Company. Sheet-like insulation. 4,275,109, Cl. 428-273.000.
Urban, Warren: *See*—
Tokosh, Richard; Barillo, Joseph; and Urban, Warren, 4,275,013, Cl. 260-504.00R.
Ushijima, Fumihiro: *See*—
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,274,817, Cl. 418-133.000.
Utumi, Masahiro: *See*—
Yamaguchi, Nobutana; Takayama, Satoru; Utumi, Masahiro; and Fujiyama, Masaaki, 4,275,108, Cl. 428-220.000.
Vacca, Philip J., to Whiting Corporation. Cupola charging. 4,274,784, Cl. 414-168.000.
Valeron Corporation, The: *See*—
Raupp, Arthur J., Jr.; Gerasin, Michael N.; and Thompson, M. Leonard, 4,274,766, Cl. 407-15.000.
Vallance, Charles B., to Leco Corporation. Heating element connector and method. 4,275,375, Cl. 338-329.000.
Valmet: *See*—
Kurkela, Matti; Lahtinen, Leo; and Ylivakeri, Raimo, 4,274,212, Cl. 37-29.000.
Valmet Oy: *See*—
Stengard, Charles, 4,274,210, Cl. 34-156.000.
Van Doorne's Transmissie B.V.: *See*—
Van der Hardt Aberson, Frederik E. C., 4,274,520, Cl. 192-3.320.
Van Beeck, Walter P.; Dictus, Alfons J.; Geens, Maurits; Simons, Roger J.; and Burtin, Jean, to AGFA-GEVAERT N.V. Method and device for inspecting a moving sheet material for streaklike defects. 4,274,747, Cl. 356-431.000.
van Buul, Marinus C. W.: *See*—
Michel, Jean P.; Le Can, Claude J. P. F.; and van Buul, Marinus C. W., 4,275,386, Cl. 340-347.0AD.
Van Den Broek, Arnoldus J. M.: *See*—
Lippits, Gerardus J. M.; Van Den Broek, Arnoldus J. M.; Op Het Veld, Adriaan J. G.; Dijkstra, Rinse; and De Jonge, Jelis, 4,275,091, Cl. 427-53.100.
Van der Hardt Aberson, Frederik E. C., to Van Doorne's Transmissie B.V. Transmission having variable V-belt unit and hydrodynamic unit. 4,274,520, Cl. 192-3.320.
Vanderhorst, Ed W.; and Vanderhorst, Henry L. Bicycle trailer and hitch. 4,274,649, Cl. 280-204.000.
Vanderhorst, Henry L.: *See*—
Vanderhorst, Ed W.; and Vanderhorst, Henry L., 4,274,649, Cl. 280-204.000.
Vander Ley, Robert J.; and Sherman, Frederick G., to Leslie Metal Arts Company. Drawer glide assembly. 4,274,689, Cl. 312-333.000.
van Hirtum, Martinus J.: *See*—
Lenders, Wilhelmus L. L.; and van Hirtum, Martinus J., 4,274,603, Cl. 242-7.140.
Vanlerberghe, Guy: *See*—
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Yamada, Hisafumi; Tokuhara, Masaharu; and Kuriki, Choei, to Sony Corporation. Television receiver with a ghost detector. 4,275,420, Cl. 358-167.000.

Yamada, Minoru: *See—*
Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, 4,274,726, Cl. 354-173.000.

Yamagami, Akio: *See—*
Watanabe, Takeo; Kubota, Tadashi; and Yamagami, Akio, 4,275,425, Cl. 360-92.000.

Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of 2,2'-bisphenol sulfoxides. 4,275,240, Cl. 568-37.000.

Yamaguchi, Keizaburo: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; Murakami, Hisamichi; and Kobayashi, Tadashi, 4,275,240, Cl. 568-37.000.

Yamaguchi, Nobutana; Takayama, Satoru; Utumi, Masahiro; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Leader or trailer tape for a magnetic tape. 4,275,108, Cl. 428-220.000.

Yamamoto, Kaichi, to Sony Corporation. Block sync signal extracting apparatus. 4,275,466, Cl. 375-113.000.

Yamamoto, Noboru; and Ohmura, Akira, to NGK Insulators, Ltd. Thermal converter. 4,275,259, Cl. 136-209.000.

Yamamoto, Satoshi, to Mitsubishi Seiko Kabushikikaisha. Assembly-type tire protector. 4,274,461, Cl. 152-167.000.

Yamamoto, Shinji: *See—*
Ogawa, Masaki; Araki, Tamio; and Yamamoto, Shinji, 4,274,462, Cl. 152-209.00R.

Yamamoto, Yoshihito: *See—*
Takahashi, Hiroshi; Shibazaki, Etsuo; and Yamamoto, Yoshihito, 4,275,268, Cl. 179-1.00B.

Yamashita, Izumi; Fukuda, Kunio; and Tazaki, Kichiya, to Asahi-Dow Limited. Diester of 3,5,3',5'-tetrabromo-bisphenol A with halogenated aromatic carboxylic acid. 4,274,998, Cl. 260-45.75B.

Yamashita, Takao: *See—*
Shimamoto, Koji; Shimizu, Mitsuo; and Yamashita, Takao, 4,275,321, Cl. 310-59.000.

Yamazaki, Shiro: *See—*
Aoki, Katsumichi; Shida, Takafumi; Kumazawa, Satoru; Ohtsuru, Masashi; and Yamazaki, Shiro, 4,275,078, Cl. 424-324.000.

Yamazaki, Yuzo, to Nissin Kogyo Kabushiki Kaisha. Brake switch actuator for autobicycle or the like. 4,275,280, Cl. 200-61.850.

Yamin, Amilcar F. Shower head. 4,274,595, Cl. 239-383.000.

Yanagihara, Noritaka: *See—*
Yokoi, Takeshi; and Yanagihara, Noritaka, 4,274,306, Cl. 74-866.000.

Yanai, Nobuya: *See—*
Takaku, Fumimaro; Ogasa, Katsuhiro; Kuboyama, Morio; Saito, Minoru; Yanai, Nobuya; and Nishida, Masayuki, 4,275,056, Cl. 424-99.000.

Yanase, Hiroshi: *See—*
Narisawa, Shigeyuki; Yanase, Hiroshi; and Kanno, Fukuo, 4,274,993, Cl. 260-37.00R.

Yang, Wen C.; Spangler, Charles E.; Morris, Joe P.; and Kearns, Dale L., to Westinghouse Electric Corp. Method and apparatus for the detection of stagnant regions in a fluidized bed or in pneumatic conveying lines. 4,275,353, Cl. 324-454.000.

Yannopoulos, John C., to Newmont Exploration Limited. Smelting of copper concentrates by oxygen injection in conventional reverberatory furnaces. 4,274,870, Cl. 75-73.000.

Yano, Tsuneomi: *See—*
Yuzawa, Haruo; and Yano, Tsuneomi, 4,274,385, Cl. 123-571.000.

Yarwood, John C.; and Tyler, Derek E., to Olin Corporation. Bottom blocks for electromagnetic casting. 4,274,470, Cl. 164-49.000.

Yasuda, Shigeo: *See—*
Matsuda, Akira; Goshima, Norio; Yasuda, Shigeo; Iwasaki, Motoaki; and Nishino, Hiroshi, 4,275,377, Cl. 340-58.000.

Yemington, Charles R.: *See—*
Schmidt, Thomas C.; and Yemington, Charles R., 4,274,405, Cl. 128-205.260.

Ying, Sui-Chun: *See—*
Baumann, Kai J.; and Ying, Sui-Chun, 4,275,320, Cl. 310-52.000.

Ylivakeri, Raimo: *See—*
Kurkela, Matti; Lahtinen, Leo; and Ylivakeri, Raimo, 4,274,212, Cl. 37-29.000.

Yokoi, Takeshi; and Yanagihara, Noritaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle transmission shift control apparatus. 4,274,306, Cl. 74-866.000.

Yoneyama, Masakazu; Ino, Shoichi; and Minamizono, Junji, to Fuji Photo Film Co., Ltd. Photographic photosensitive materials. 4,275,146, Cl. 430-523.000.

Yoneyama, Saburo; Yamada, Minoru; Nakagawa, Yasutsugu; Ishii, Shizuo; and Kamio, Masao, to Konishiroku Photo Industry Co., Ltd. Automatic film winder for camera. 4,274,726, Cl. 354-173.000.

Yoshida, Tadao; and Suzuki, Tadao, to Sony Corporation. MOS FET Amplifier. 4,275,359, Cl. 330-251.000.

Yoshida, Yoji: *See—*
Itoh, Shuji; and Yoshida, Yoji, 4,274,905, Cl. 156-462.000.

Yoshida, Yuji: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; Yoshida, Yuji; and Asano, Toshihisa, 4,274,889, Cl. 148-133.000.

Yoshii, Takashi: *See—*
Kajino, Masayori; Yoshii, Takashi; and Tama, Tomeaki, 4,274,652, Cl. 280-460.00A.

Yoshimura, Shigeru: *See—*
Sato, Tadashi; Yoshimura, Shigeru; and Ichikawa, Kiyomichi, 4,274,624, Cl. 271-292.000.

Yoshinari, Hideki: *See—*
Kato, Yuzo; Ogino, Yasuo; Hiraga, Ryozo; Yoshinari, Hideki; Tozuka, Masao; and Kano, Ichiro, 4,275,306, Cl. 250-548.000.

Yoshioka, Toshio; Teramoto, Kazuo; and Shimamura, Masaharu, to Toray Industries, Inc. Glucose isomerase immobilized product and process for preparing same. 4,275,156, Cl. 435-94.000.

Young, Peter L.: *See—*
Borrelli, Nicholas F.; and Young, Peter L., 4,275,141, Cl. 430-270.000.

Young, Stephen H.: *See—*
Louie, Anthony C. H.; and Young, Stephen H., 4,275,421, Cl. 358-183.000.

Youngdale, Gilbert A., to Upjohn Company, The. Anti-diabetic 1,2-dihydro-2-oxo-6-alkyl-nicotinic acids. 4,275,069, Cl. 424-266.000.

Younger Manufacturing Company: *See—*
Davenport, Lawrence J., 4,274,717, Cl. 351-169.000.

Yukimoto, Yoshinori, to Mitsubishi Denki Kabushiki Kaisha. Thyristor. 4,275,408, Cl. 357-38.000.

Yun, Bob H.: *See—*
Venkataraman, Krishnamur; and Yun, Bob H., 4,274,909, Cl. 156-648.000.

Yusa, Haruhiko; Oota, Masanori; and Suzuki, Katsumi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Powdery graft-copolymer composition. 4,275,178, Cl. 525-71.000.

Yuzawa, Haruo; and Yano, Tsuneomi, to Nissan Motor Company, Limited. Exhaust gas recirculation system for internal combustion engine. 4,274,385, Cl. 123-571.000.

Zacharias, Theodor; and Terdenge, Bernhard, to Kocks Technik GmbH & Co. Rolling mills. 4,274,274, Cl. 72-239.000.

Zacky, Ralf G. Sliding door structure. 4,274,688, Cl. 312-304.000.

Zahid, Abduz, to Greer Hydraulics, Incorporated. Low cost repairable accumulator. 4,274,446, Cl. 138-30.000.

Zahn, David C.; and Slovak, Anci B. Construction element and throwing toy made therefrom. 4,274,222, Cl. 46-29.000.

Zaitsu, Hiroshi: *See—*
Saito, Osamu; Shimizu, Jozo; and Zaitsu, Hiroshi, 4,275,113, Cl. 428-323.000.

Zajac, David C.: *See—*
Nachtigal, Julius H.; and Zajac, David C., 4,275,055, Cl. 424-70.000.

Zajichek, William J.: *See—*
Slosiarek, Michael L.; and Zajichek, William J., 4,274,671, Cl. 296-190.000.

Zeller, Norbert: *See—*
Bischofberger, Walter; and Zeller, Norbert, 4,275,392, Cl. 340-606.000.

Zellner, Edmond: *See—*
Anav, Maurice; Duhayon, Jacques; Goumondy, Jean-Pierre; Leseur, Andre; and Zellner, Edmond, 4,275,045, Cl. 423-249.000.

Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans-cyclohexane-1,4-diurethanes. 4,275,223, Cl. 560-115.000.

Zenith Radio Corporation: *See—*
Grocki, Wayne; and Steinmetz, Richard J., 4,275,338, Cl. 315-381.000.

Zeyer, Josef; Hutter, Ralf; and Mayer, Peter, to Ciba-Geigy Corporation. Process for the degradation of cyanuric acid. 4,274,955, Cl. 210-612.000.

Ziegert, Otto: *See—*
Kolb, Fritz; Fehlisch, Silvan; Ziegert, Otto; Bender, Hans; and Schmitt, Manfred, 4,274,439, Cl. 137-601.000.

Zieschang, Jurgen: *See—*
Harmsen, Lothar; Bick, Klaus; Lachenmayer, Wilhelm; Vennmann, Friedhelm; and Zieschang, Jurgen, 4,275,258, Cl. 13-32.000.

Zilka, Ladislav, to Vyskumny ustav papieru a celulozy. Blade conveyer for a continuously operating digester of the Bauer M and D type. 4,274,918, Cl. 162-237.000.

Ziller, Jorg: *See—*
Makosch, Gunter; Schedewie, Franz; Schmackpfeffer, Arno; and Ziller, Jorg, 4,275,288, Cl. 219-121.0LR.

Zilske, Wolfgang: *See—*
Simon, Franz; Zilske, Wolfgang; and Schmidt, Manfred, 4,274,927, Cl. 204-39.000.

Zimmerman, John A., Jr.: *See*—
Long, William B.; and Zimmerman, John A., Jr., 4,274,696, Cl. 339-103.00R.

Zipp, Darrell B.: *See*—
Knauff, Robert J.; Fisher, David R.; Johnson, Kenneth D.; Zipp, Darrell B.; and John, Frederick W., 4,274,225, Cl. 46-227.000.

Zirbel, John P., to United States of America, Navy. Real-time audio spectrum analyzer. 4,275,460, Cl. 367-102.000.

Zobel, Jurgen, to Richard Wolf GmbH. Endoscopes incorporating a beam splitter. 4,274,704, Cl. 350-10.000.

Zollinger, Hans: *See*—
Freisler, Erhard; Lutz, Friedrich; and Zollinger, Hans, 4,274,449, Cl. 139-449.000.

Zoltan, Sandor: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, 4,274,985, Cl. 260-17.4ST.

Zsadon, Bela: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zoltan, Sandor; Zsadon, Bela; and Tudos, Ferenc, 4,274,985, Cl. 260-17.4ST.

Zukowski, Edward C.: *See*—
Cho, Chong I.; Zukowski, Edward C.; and Speros, Dimitri M., 4,275,330, Cl. 313-218.000.

Zupan, Jacob A., to INTERx Research Corporation. Novel process and intermediates useful in the preparation of sympathomimetic amines. 4,275,219, Cl. 560-29.000.

Zurbuchen, Jacques, to Ciba-Geigy Corporation. Continuous dyeing process in organic solvent vapors. 4,274,829, Cl. 8-475.000.

Zysman, Alexandre: *See*—
Sebag, Henri; Zysman, Alexandre; and Vanlerberghe, Guy, 4,275,054, Cl. 424-65.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF JUNE, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Incorporated: *See—*
Dittmann, Larry E.; Millhimes, Wayne L.; and Steinhauer, Glenn A., Re. 30,654, Cl. 425-438.000.

Bendix Corporation, The: *See—*
Schuster, Robert W., Re. 30,653, Cl. 60-39.28R.

Chandavoine, Marie-Madeleine: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; Chignac, Michel; and de Cointet de Fillain, Paul, Re. 30,655, Cl. 549-79.000.

Chignac, Michel: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; Chignac, Michel; and de Cointet de Fillain, Paul, Re. 30,655, Cl. 549-79.000.

de Cointet de Fillain, Paul: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; Chignac, Michel; and de Cointet de Fillain, Paul, Re. 30,655, Cl. 549-79.000.

Dittmann, Larry E.; Millhimes, Wayne L.; and Steinhauer, Glenn A., to AMP Incorporated. Stripper ring for a capsule-making machine. Re. 30,654, Cl. 425-438.000.

Labaz: *See—*
Pigerol, Charles; Chandavoine, Marie-Madeleine; Chignac, Michel; and de Cointet de Fillain, Paul, Re. 30,655, Cl. 549-79.000.

Millhimes, Wayne L.: *See—*
Dittmann, Larry E.; Millhimes, Wayne L.; and Steinhauer, Glenn A., Re. 30,654, Cl. 425-438.000.

Pigerol, Charles; Chandavoine, Marie-Madeleine; Chignac, Michel; and de Cointet de Fillain, Paul, to Labaz. Process for preparing 3-thienylacetate derivatives. Re. 30,655, Cl. 549-79.000.

Schuster, Robert W., to Bendix Corporation, The. Fuel control for gas turbine engine. Re. 30,653, Cl. 60-39.28R.

Steinhauer, Glenn A.: *See—*
Dittmann, Larry E.; Millhimes, Wayne L.; and Steinhauer, Glenn A., Re. 30,654, Cl. 425-438.000

LIST OF DESIGN PATENTEES

A. B. Chance Company: *See—*
Clutter, Melvin E., 259,634, Cl. D13-17.000.

Adidas Fabrique de Chaussures de Sport: *See—*
Fiott, Stephen E., 259,650, Cl. D21-212.000.

Affiliated Hatch and Sunroof, Inc.: *See—*
Butler, James P., 259,633, Cl. D12-155.000.

Ahrens, Paul W., to Miracle Recreation Equipment Company. Playground swing. 259,652, 6-23-81, Cl. D21-246.000.

Alfrink, Cornelis M.; and van Gasse, Rene L., to Teewen, B.V. Combined drainboard and sink support or similar article. 259,656, 6-23-81, Cl. D23-69.000.

Amarger, Guy, to Compagnie Generale des Etablissements Michelin. Tire. 259,632, 6-23-81, Cl. D12-147.000.

American Home Products Corp.: *See—*
Gandier, John C. C., 259,662, Cl. D24-27.000.

American Standard Inc.: *See—*
Stairs, Henry M., Jr.; and Leviton, Jan, 259,608, Cl. D6-209.000.

Angelakos, Nicholas P., to Lancaster Colony Corporation. Wine cooler. 259,614, 6-23-81, Cl. D7-70.000.

Anthony, Larry; and Kasom, Wayne, Jr., to Rolm Corporation. Telephone desk set. 259,639, 6-23-81, Cl. D14-58.000.

Baba, Kaichi. Pole cap for tent. 259,654, 6-23-81, Cl. D21-254.000.

Blodgett, Norman S.: *See—*
Nicholson, William H., 259,619, Cl. D8-47.000.

Bon Aire Industries, Inc.: *See—*
Tack, Suen S., 259,618, Cl. D7-164.000.

Braxton, Vance P., III. Campfire grill. 259,617, 6-23-81, Cl. D7-107.000.

Brinkmann, Werner: *See—*
Katzer, Eduard; Brinkmann, Werner; and Wehner, Gerhard, 259,609, Cl. D6-210.000.

Bunting, Larry L. Pipefitting-insulation jacket. 259,658, 6-23-81, Cl. D23-137.000.

Butler, James P., to Affiliated Hatch and Sunroof, Inc. Vehicle console unit. 259,633, 6-23-81, Cl. D12-155.000.

Casio Computer Co., Ltd.: *See—*
Wada, Masao, 259,626, Cl. D10-38.000.

Claber S.p.A.: *See—*
Roman, Gianfranco, 259,655, Cl. D23-8.000.

Clutter, Melvin E., to A. B. Chance Company. Insulator cover. 259,634. 6-23-81, Cl. D13-17.000.

Compagnie Generale des Etablissements Michelin: *See—*
Amarger, Guy, 259,632, Cl. D12-147.000.

Coppell, Frederik K., to FKC Engineering Co. Stuffing tube for passing electrical current through bulkheads. 259,636, 6-23-81, Cl. D13-24.000.

Cousins, Morison S., to Gillette Company, The. Hair dryer. 259,665, 6-23-81, Cl. D28-13.000.

Credicott, Betty T. Seat or similar article. 259,599, 6-23-81, Cl. D6-76.000.

Curless, Sheila M., to Gately Enterprises. Shelter. 259,664, 6-23-81, Cl. D25-56.000.

Dart Industries Inc.: *See—*
Painter, David L.; and Hiatt, Russell D., 259,616, Cl. D7-94.000.

Day, Maxwell W. Tent. 259,653, 6-23-81, Cl. D21-253.000.

Della Giovanna, Roberto, to International Standard Electric Corporation. Telephone subset. 259,638, 6-23-81, Cl. D14-53.000.

Ethicon, Inc.: *See—*
Schuler, Michael; Mandel, Harvey B.; and Studer, John E., 259,604, Cl. D6-186.000.

Famolare, Inc.: *See—*
Famolare, Joseph P., Jr., 259,595, Cl. D2-320.000.

Famolare, Joseph P., Jr., to Famolare, Inc. Shoe sole. 259,595, 6-23-81, Cl. D2-320.000.

Fiott, Stephen E., to Adidas Fabrique de Chaussures de Sport. Design for a tennis racket frame. 259,650, 6-23-81, Cl. D21-212.000.

FKC Engineering Co.: *See—*
Coppell, Frederik K., 259,636, Cl. D13-24.000.

Gagnon, Yves. Table for use primarily on a boat. 259,603, 6-23-81, Cl. D6-177.000.

Gandier, John C. C., to American Home Products Corp. Tourniquet and vein delineator. 259,662, 6-23-81, Cl. D24-27.000.

Gately Enterprises: *See—*
Curless, Sheila M., 259,664, Cl. D25-56.000.

General Electric Company: *See—*
Martin, Robert L.; and Smith, Donald F., 259,637, Cl. D13-30.000.

Gillette Company, The: *See—*
Cousins, Morison S., 259,665, Cl. D28-13.000.
Gray, Michael J., 259,596, Cl. D3-39.000.

Giroflex Entwicklungs AG: *See—*
Locher, Hermann, 259,598, Cl. D6-75.000.

Gomez, Francine, to Waterman, S.A. Ball point pen. 259,642, 6-23-81, Cl. D19-51.000.

Grant, Perry J.: *See—*
Israel, Leonard H.; and Grant, Perry J., 259,644, Cl. D21-23.000.

Gray, Michael J., to Gillette Company, The. Carrying case for a razor. 259,596, 6-23-81, Cl. D3-39.000.

Grimberg, Herbert P.; and Seifried, Richard, Jr. Toy submarine. 259,646, 6-23-81, Cl. D21-130.000.

Hamilton, Robert S.; and Sneeden, John R., to Liqui-Box Corporation. Container for ice cream or other products in bulk. 259,625, 6-23-81, Cl. D9-428.000.

Hiatt, Russell D.: *See—*
Painter, David L.; and Hiatt, Russell D., 259,616, Cl. D7-94.000.

International Standard Electric Corporation: *See—*
Della Giovanna, Roberto, 259,638, Cl. D14-53.000.

Irving Kaye Company, Inc.: *See—*
Kaye, Arnold, 259,651, Cl. D21-232.000.

Israel, Leonard H.; and Grant, Perry J. Three dimensional game board. 259,644, 6-23-81, Cl. D21-23.000.

Jacobs, Andre. Mobile. 259,628, 6-23-81, Cl. D11-141.000.

Johnsen, Walter. Fastening device for tie down straps on tarpaulins and the like. 259,620, 6-23-81, Cl. D8-394.000.

Kasom, Wayne, Jr.: *See—*
Anthony, Larry; and Kasom, Wayne, Jr., 259,639, Cl. D14-58.000.

Katzer, Eduard; Brinkmann, Werner; and Wehner, Gerhard, to Vorwerk & Co. Teppichwerke GmbH & Co. KG. Oriental rug. 259,609, 6-23-81, Cl. D6-210.000.

Kaye, Arnold, to Irving Kaye Company, Inc. Pool table. 259,651, 6-23-81, Cl. D21-232.000.

Kin Hip Metal & Plastic Fty. Ltd.: *See—*
Sun, Kin C., 259,613, Cl. D7-64.000.
Koelbel, William: *See—*
Stahl, Otto, Jr.; and Koelbel, William, 259,607, Cl. D6-195.000.
Lancaster Colony Corporation: *See—*
Angelakos, Nicholas P., 259,614, Cl. D7-70.000.
Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu, 259,641, Cl. D18-3.000.
Leviton, Jan: *See—*
Stairs, Henry M., Jr.; and Leviton, Jan, 259,608, Cl. D6-209.000.
Liqui-Box Corporation: *See—*
Hamilton, Robert S.; and Sneeden, John R., 259,625, Cl. D9-428.000.
Lloyd Plastics Company: *See—*
Peterson, Lloyd A., 259,669, Cl. D30-16.000.
Locher, Hermann, to Giroflex Entwicklungs AG. Chair or similar article. 259,598, 6-23-81, Cl. D6-75.000.
MacLean, Charles A. Horseman figure. 259,630, 6-23-81, Cl. D11-159.000.
Mandel, Harvey B.: *See—*
Schuler, Michael; Mandel, Harvey B.; and Studer, John E., 259,604, Cl. D6-186.000.
Marcy Gymnasium Equipment Company: *See—*
Uyeda, Tim M., 259,649, Cl. D21-195.000.
Marks, Robert J. Ottoman. 259,597, 6-23-81, Cl. D6-36.000.
Marks, Robert J. Corner seat. 259,600, 6-23-81, Cl. D6-76.000.
Marks, Robert J. Chair. 259,601, 6-23-81, Cl. D6-76.000.
Marks, Robert J. Corner seat frame. 259,605, 6-23-81, Cl. D6-191.000.
Marks, Robert J. Chair frame. 259,606, 6-23-81, Cl. D6-191.000.
Martin, Nick P. Simulative photo frame. 259,610, 6-23-81, Cl. D6-245.000.
Martin, Nick P. Simulative photo frame. 259,611, 6-23-81, Cl. D6-245.000.
Martin, Robert L.; and Smith, Donald F., to General Electric Company. Electric cord connector. 259,637, 6-23-81, Cl. D13-30.000.
McGinnis, Patricia L. Electro-dessicator handle cover. 259,661, 6-23-81, Cl. D24-17.000.
Metz, Thomas V.; and Sirois, W. James, to Pacific Fireplace Furnishings, Inc. Forced air fireplace furnace. 259,657, 6-23-81, Cl. D23-95.000.
Minnesota Mining and Manufacturing Company: *See—*
Pearson, Walter C., 259,643, Cl. D19-69.000.
Mioni, Marcello. Table. 259,602, 6-23-81, Cl. D6-175.000.
Miracle Recreation Equipment Company: *See—*
Ahrens, Paul W., 259,652, Cl. D21-246.000.
Moravek, Milton G. Highway safety marker. 259,627, 6-23-81, Cl. D10-109.000.
Morris, George A., Jr. Portable cooler. 259,615, 6-23-81, Cl. D7-76.000.
Myers Electric Products, Inc.: *See—*
Plummer, Merle A., 259,635, Cl. D13-24.000.
Nicholson, William H., to Blodgett, Norman S., a part interest. Wedge. 259,619, 6-23-81, Cl. D8-47.000.
Olympus Optical Company Ltd.: *See—*
Takata, Kazuaki, 259,640, Cl. D16-10.000.
Pacific Fireplace Furnishings, Inc.: *See—*
Metz, Thomas V.; and Sirois, W. James, 259,657, Cl. D23-95.000.
Painter, David L.; and Hiatt, Russell D., to Dart Industries Inc. Sausage cooker. 259,616, 6-23-81, Cl. D7-94.000.
Pearson, Walter C., to Minnesota Mining and Manufacturing Company. Tape dispenser. 259,643, 6-23-81, Cl. D19-69.000.
Peterson, Lloyd A., to Lloyd Plastics Company. Pet food dish. 259,669, 6-23-81, Cl. D30-16.000.
Plummer, Merle A., to Myers Electric Products, Inc. Connector assembly for a wire conduit. 259,635, 6-23-81, Cl. D13-24.000.
Ramacciotti, William S. Animal carcass handling vehicle or similar article. 259,631, 6-23-81, Cl. D12-57.000.
Rolm Corporation: *See—*
Anthony, Larry; and Kasom, Wayne, Jr., 259,639, Cl. D14-58.000.
Roman, Gianfranco, to Claber S.p.A. Sprinkler. 259,655, 6-23-81, Cl. D23-8.000.
Schick Laboratories, Inc.: *See—*
Sears, Hartley M., 259,659, Cl. D24-8.000.
Schuler, Michael; Mandel, Harvey B.; and Studer, John E., to Ethicon, Inc. Modular cabinet box. 259,604, 6-23-81, Cl. D6-186.000.
Sears, Hartley M., to Schick Laboratories, Inc. Electrical impulse apparatus. 259,659, 6-23-81, Cl. D24-8.000.
Seifried, Richard, Jr.: *See—*
Grimberg, Herbert P.; and Seifried, Richard, Jr., 259,646, Cl. D21-130.000.
Shiraishi, Masami, to Tomy Kogyo Co., Inc. Toy balance. 259,645, 6-23-81, Cl. D21-102.000.
Sirois, W. James: *See—*
Metz, Thomas V.; and Sirois, W. James, 259,657, Cl. D23-95.000.
Smith, Donald F.: *See—*
Martin, Robert L.; and Smith, Donald F., 259,637, Cl. D13-30.000.
Sneeden, John R.: *See—*
Hamilton, Robert S.; and Sneeden, John R., 259,625, Cl. D9-428.000.
Sosnay, Alan J. Dental threading tool. 259,660, 6-23-81, Cl. D24-11.000.
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Sztuden, Luis. Bottle. 259,622, 6-23-81, Cl. D9-310.000.
Sztuden, Luis. Bottle. 259,623, 6-23-81, Cl. D9-311.000.
Sztuden, Luis. Bottle. 259,624, 6-23-81, Cl. D9-318.000.
Tack, Suen S., to Bon Aire Industries, Inc. Hand-held vacuum cleaner with light. 259,618, 6-23-81, Cl. D7-164.000.
Takahashi, Osamu, to Tomy Kogyo Co., Inc. Skateboarding figurine toy. 259,647, 6-23-81, Cl. D21-150.000.
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Takata, Kazuaki, to Olympus Optical Company Ltd. Indicator for camera. 259,640, 6-23-81, Cl. D16-10.000.
Teewen, B.V.: *See—*
Alfrink, Cornelis M.; and van Gasse, Rene L., 259,656, Cl. D23-69.000.
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Tomy Kogyo Co., Inc.: *See—*
Shiraishi, Masami, 259,645, Cl. D21-102.000.
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van Gasse, Rene L.: *See—*
Alfrink, Cornelis M.; and van Gasse, Rene L., 259,656, Cl. D23-69.000.
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Vorwerk & Co. Teppichwerke GmbH & Co. KG.: *See—*
Katzer, Eduard; Brinkmann, Werner; and Wehner, Gerhard, 259,609, Cl. D6-210.000.
Wada, Masao, to Casio Computer Co., Ltd. Digital wrist watch or the like. 259,626, 6-23-81, Cl. D10-38.000.
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Gomez, Francine, 259,642, Cl. D19-51.000.
Wehner, Gerhard: *See—*
Katzer, Eduard; Brinkmann, Werner; and Wehner, Gerhard, 259,609, Cl. D6-210.000.
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CLASSIFICATION OF PATENTS

ISSUED JUNE 23, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2	4,274,159
2.1 R	4,274,158
181.4	4,274,157
195	4,274,160
413	4,274,161

CLASS 3

1.3	4,274,162
1.91	4,274,163
1.913	4,274,164
12	4,274,165
17 R	4,274,166

CLASS 5

62	4,274,167
81 B	4,274,168
502	4,274,169

CLASS 8

475	4,274,829
495	4,274,830
532	4,274,831

CLASS 9

1.4	4,274,170
4 R	4,274,171

CLASS 13

32	4,275,258

CLASS 14

69.5	4,274,172

CLASS 15

28	4,274,173
143 R	4,274,174
250.24	4,274,175
341	4,274,176

CLASS 19

99	4,274,177
106 R	4,274,178
245	4,274,179

CLASS 23

230 B	4,274,833
230 R	4,274,832
302 R	4,274,834

CLASS 24

155 BR	4,274,180
201 A	4,274,181

CLASS 26

2 R	4,274,182

CLASS 29

28	4,274,183
121.1	4,274,184
123	4,274,185
157.3 D	4,274,186
225	4,274,187
240	4,274,188
256	4,274,189
401.1	4,274,190
408	4,274,191
568	4,274,192
571	4,274,193
717	4,274,194
741	4,274,195
	4,274,196
861	4,274,197
866	4,274,198

CLASS 30

34.1	4,274,199
161	4,274,200
276	4,274,201
365	4,274,202

CLASS 33

1 LE	4,274,203
1 SD	4,274,204
174 L	4,274,205
178 B	4,274,206
179.5 R	4,274,207
371	4,274,208

CLASS 34

1	4,274,209
156	4,274,210

CLASS 36

30 R	4,274,211

CLASS 37

29	4,274,212
117.5	4,274,213

CLASS 38

1 C	4,274,214
144	4,274,215

CLASS 40

306	4,274,216
451	4,274,217
505	4,274,218

CLASS 43

27.2	4,274,219
35	4,274,220

CLASS 44

1 SR	4,274,835
6	4,274,836
63	4,274,837

CLASS 46

25	4,274,221
29	4,274,222
95	4,274,223
161	4,274,224
227	4,274,225

CLASS 48

111	4,274,838
202	4,274,839

CLASS 49

25	4,274,226
28	4,274,227
56	4,274,228

CLASS 51

95 WH	4,274,229
165 R	4,274,230
165.71	4,274,231
307	4,274,840
358	4,274,232

CLASS 52

33	4,274,233
63	4,274,234
213	4,274,235
309.8	4,274,236
312	4,274,237
408	4,274,238
443	4,274,239
583	4,274,240
642	4,274,241
741	4,274,242
748	4,274,243

CLASS 53

451	4,274,244
558	4,274,245

CLASS 54

6 R	4,274,246

CLASS 55

40	4,274,841
72	4,274,842
139	4,274,843
196	4,274,844
222	4,274,845
270	4,274,846
374	4,274,847
387	4,274,848

CLASS 56

14.4	4,274,247
370	4,274,248
	4,274,249

CLASS 57

5	4,274,250
206	4,274,251

CLASS 59

86	4,274,252

CLASS 60

39.03	4,274,253
	4,274,254
39.14 R	4,274,255
39.18 B	4,274,256
39.28 R	Re.30,653
431	4,274,257
547 R	4,274,258
663	4,274,259
	4,274,260
682	4,274,261

CLASS 62

3	4,274,262
9	4,274,849
24	4,274,850
40	4,274,851
71	4,274,263
148	4,274,264
158	4,274,265
171	4,274,266
252	4,274,267

CLASS 64

7	4,274,268
11 R	4,274,269

CLASS 65

2	4,274,852
	4,274,853
	4,274,854
	4,274,855
24	4,274,856
26	4,274,857
273	4,274,858
314	4,274,859

CLASS 69

19.3	4,274,270

CLASS 70

59	4,274,271
214	4,274,272

CLASS 71

24	4,274,860
117	4,274,861
118	4,274,862

CLASS 72

13	4,274,273
239	4,274,274
307	4,274,275
354	4,274,276
356	4,274,277

CLASS 73

7	4,274,278
55	4,274,279
61 LM	4,274,280
118	4,274,281
153	4,274,283
354	4,274,284
432 R	4,274,286
457	4,274,287
602	4,274,288
618	4,274,289
683.31	4,274,285
837	4,274,290
862.64	4,274,282

CLASS 74

5.37	4,274,291
6	4,274,292
89.15	4,274,293
	4,274,294
424.8 R	4,274,296
	4,274,297
467	4,274,298
492	4,274,299
501.5 R	4,274,300
551.1	4,274,301
661	4,274,302
740	4,274,303
792	4,274,304
865	4,274,305
866	4,274,306
869	4,274,307
	4,274,308

CLASS 75

0.5 AA	4,274,865
0.5 R	4,274,864
5	4,274,863
	4,274,866
13	4,274,867
21	4,274,868
53	4,274,869
73	4,274,870
134 M	4,274,871
157.5	4,274,872
211	4,274,873
231	4,274,874
232	4,274,875
245	4,274,876
252	4,274,877
256	4,274,878

CLASS 76

114	4,274,309

CLASS 81

57.36	4,274,310
63	4,274,311
356	4,274,312

CLASS 82

12	4,274,313
36 R	4,274,314
47	4,274,315

CLASS 83

23	4,274,316
74	4,274,317
177	4,274,318
430	4,274,319

CLASS 84

1.01	4,274,320
1.03	4,274,321
422 R	4,274,322

CLASS 89

12	4,274,325

CLASS 91

49	4,274,326
196	4,274,327
445	4,274,328

CLASS 92

33	4,274,329

CLASS 98

37	4,274,330

CLASS 99

373	4,274,331

CLASS 100

299	4,274,332

CLASS 102

418	4,274,333

CLASS 104

2	4,274,334
93	4,274,335
124	4,274,336

CLASS 105

99	4,274,337
144	4,274,338
168	4,274,339
197 DB	4,274,340

CLASS 106

39.5	4,274,879
90	4,274,880
98	4,274,881
280	4,274,882
308 Q	4,274,883

CLASS 110

229	4,274,341
246	4,274,342
263	4,274,343
346	4,274,344

CLASS 112

51	4,274,345
79 R	4,274,346
104	4,274,347
158 E	4,274,348
169	4,274,349
235	4,274,350

CLASS 113

1 F	4,274,351
57	4,274,352

CLASS 114

21 A	4,274,353
244	4,274,354
255	4,274,355
265	4,274,356
270	4,274,357

CLASS 116

288	4,274,358

CLASS 118

56	4,274,359
303	4,274,360
653	4,274,361
657	4,274,362

CLASS 119

1	4,274,363
35	4,274,364
78	4,274,365
98	4,274,366

CLASS 123

52 A	4,274,367
52 M	4,274,368
53 A	4,274,369
90.55	4,274,370
179 H	4,274,371
193 P	4,274,372
241	4,274,374
263	4,274,375
360	4,274,376
396	4,274,377
421	4,274,378
425	4,274,379
440	4,274,373
456	4,274,380
479	4,274,381
481	4,274,382
523	4,274,383
568	4,274,384
571	4,274,385
591	4,274,386

CLASS 124

20 A	4,274,387

CLASS 125

11 TP	4,274,388
21	4,274,389

CLASS 126

19.5	4,274,390
33	4,274,391
112	4,274,392
123	4,274,393
425	4,274,394
432	4,274,395
438	4,274,396
451	4,274,397

CLASS 128

20	4,274,398
26	4,274,399
53	4,274,400
69	4,274,401
89 R	4,274,402
203.15	4,274,403
204.25	4,274,404
205.26	4,274,405
206.21	4,274,406
213 R	4,274,407
214.4	4,274,408
215	4,274,409
270	4,274,410
276	4,274,411
285	4,274,412
303.13	4,274,413
305	4,274,414
321	4,274,415
330	4,274,416
632	4,274,417
635	4,274,418
639	4,274,419
641	4,274,420
660	4,274,421
661	4,274,422
675	4,274,423
686	4,274,424
719	4,274,425

CLASS 130

27 T	4,274,426

CLASS 131

293	4,274,427
331	4,274,428

CLASS 134

4	4,274,884
21	4,274,885
25.2	4,274,886

CLASS 135

20 A	4,274,429
65	4,274,430

CLASS 136

209	4,275,259

CLASS 137

43	4,274,431
315	4,274,432
454.6	4,274,433
498	4,274,434
508	4,274,435
515.7	4,274,436
527	4,274,437
551	4,274,438
601	4,274,439
613	4,274,440
614.05	4,274,441
625.17	4,274,442
625.64	4,274,443
630.14	4,274,444
636.1	4,274,445

CLASS 138

30	4,274,446

CLASS 139

97	4,274,447
383 A	4,274,448
449	4,274,449

CLASS 140

82	4,274,450
106	4,274,451

CLASS 141

1	4,274,452
	4,274,453
	4,274,454
	4,274,455
157	4,274,456

CLASS 144

34 E	4,274,457
144.5 R	4,274,459
193 D	4,274,458

CLASS 148

31.5	4,274,887
108	4,274,888
133	4,274,889
171	4,274,890
175	4,274,891
188	4,274,892

CLASS 149

2	4,274,893
7	4,274,894

CLASS 152

167	4,274,461
209 R	4,274,462
213 R	4,274,463
352 R	4,274,464
379.5	4,274,465
381.3	4,274,466

CLASS 156

53	4,274,895
88	4,274,896
96	4,274,897
98	4,274,898
123 R	4,274,899
229	4,274,900
242	4,274,901
344	4,274,902
355	4,274,903
461	4,274,904
462	4,274,905
540	4,274,906
637	4,274,907
	4,274,908
648	4,274,909

CLASS 159

1 C	4,274,910

CLASS 160

84 R 4,274,467
90 4,274,468
107 4,274,469

CLASS 162

15 4,274,911
41 4,274,912
65 4,274,913
109 4,274,914
129 4,274,915
145 4,274,916
146 4,274,917
237 4,274,918

CLASS 164

49 4,274,470
87 4,274,471
416 4,274,472
423 4,274,473

CLASS 165

7 4,274,474
12 4,274,475
80 E 4,274,476
101 4,274,477
104.16 4,274,478
104.26 4,274,479
111 4,274,480
122 4,274,481
153 4,274,482
4,274,483

CLASS 166

188 4,274,484
250 4,274,485
4,274,486
261 4,274,487
273 4,274,488
315 4,274,489
325 4,274,490

CLASS 169

46 4,274,491

CLASS 172

285 4,274,492
816 4,274,493

CLASS 173

2 4,274,494
162 R 4,274,495

CLASS 174

17 GF 4,275,260
73 R 4,275,261
128 R 4,275,262
152 R 4,275,263

CLASS 175

57 4,274,496
100 4,274,497
228 4,274,498

CLASS 176

3 4,274,919
30 4,274,920
78 4,274,921
87 4,274,922

CLASS 177

1 4,274,499
25 4,274,500
210 FP 4,274,501

CLASS 178

18 4,275,264
22.09 4,275,265

CLASS 179

1 B 4,275,268
1 FS 4,275,269
1 J 4,275,267
1 SC 4,275,270
1 VC 4,275,266
2 EB 4,275,271
7.1 TP 4,275,272
90 B 4,275,273
170 D 4,275,276
170 NC 4,275,277
181 F 4,275,278

CLASS 180

6.2 4,274,502
23 4,274,503
143 4,274,504
215 4,274,505

CLASS 181

210 4,274,506

CLASS 182

12 4,274,507
116 4,274,508

CLASS 184

15 B 4,274,509

CLASS 188

1 A 4,274,511
1 B 4,274,510
65.1 4,274,512
72.7 4,274,513
73.3 4,274,514
269 4,274,515
310 4,274,516
315 4,274,517
344 4,274,518

CLASS 192

3.28 4,274,519
3.32 4,274,520
3.57 4,274,521
9 4,274,522
21 4,274,523
48.3 4,274,524
106.2 4,274,525

CLASS 193

25 B 4,274,526
32 4,274,527

CLASS 194

102 4,274,528

CLASS 198

339 4,274,529
347 4,274,530
397 4,274,531
429 4,274,532
450 4,274,533
479 4,274,534
493 4,274,535
851 4,274,536

CLASS 200

11 DA 4,275,279
61.85 4,275,280

CLASS 201

39 4,274,923

CLASS 202

255 4,274,924

CLASS 204

26 4,274,925
39 4,274,926
4,274,927
98 4,274,928
112 4,274,930
119 4,274,931
159.2 4,274,932
159.24 4,274,933
162 R 4,274,934
192 M 4,274,935
192 R 4,274,936
195 R 4,274,937
239 4,274,938
257 4,274,939
294 4,274,940

CLASS 206

329 4,274,537
394 4,274,538
554 4,274,539
597 4,274,540
613 4,274,541

CLASS 208

8 R 4,274,941
113 4,274,942
181 4,274,943
352 4,274,944

CLASS 209

5 4,274,945
4,274,946
9 4,274,948
12 4,274,947
17 4,274,949
166 4,274,950
167 4,274,951
273 4,274,952
326 4,274,953

CLASS 210

172 4,274,957
208 4,274,958
221.1 4,274,960
221.2 4,274,959
225 4,274,961
257.1 4,274,962
320 4,274,963
321.3 4,274,964
500.2 4,274,965
611 4,274,954
612 4,274,955
618 4,274,966
638 4,274,956
659 4,274,967
666 4,274,968
721 4,274,969
748 4,274,970
778 4,274,971

CLASS 212

270 4,274,542

CLASS 215

6 4,274,543
344 4,274,544

CLASS 219

10.49 R 4,275,281
4,275,282
10.55 F 4,275,283
74 4,275,284
93 4,275,285
121 EK 4,275,286
121 LR 4,275,288
121 PR 4,275,287
4,275,289
216 4,275,290

CLASS 220

4 B 4,274,546
4 R 4,274,545
4,274,547
72 4,274,548
86 R 4,274,549

CLASS 221

71 4,274,550
78 4,274,551

CLASS 222

61 4,274,552
76 4,274,553
107 4,274,554
4,274,555
135 4,274,556
136 4,274,557
214 4,274,558
217 4,274,559
321 4,274,560
334 4,274,561
401 4,274,562
480 4,274,563

CLASS 223

93 4,274,564
102 4,274,565

CLASS 224

35 4,274,566
42.43 4,274,567
319 4,274,568
4,274,569
324 4,274,570

CLASS 225

96.5 4,274,572
106 4,274,573

CLASS 226

170 4,274,574

CLASS 228

160 4,274,575
264 4,274,576

CLASS 229

1.5 R 4,274,577
27 4,274,578
28 R 4,274,579
52 B 4,274,580

CLASS 235

92 DN 4,275,292
92 FL 4,275,291

CLASS 237

7 4,274,581

CLASS 238

349 4,274,582

CLASS 239

1 4,274,583
4,274,584
124 4,274,585
125 4,274,586
132.3 4,274,587
138 4,274,588
167 4,274,589
185 4,274,590
188 4,274,591
200 4,274,592
265.35 4,274,593
327 4,274,594
383 4,274,595
533.9 4,274,596
542 4,274,597
585 4,274,598

CLASS 241

16 4,274,599
18 4,274,600
186.2 4,274,601
298 4,274,602

CLASS 242

7.14 4,274,603
43 R 4,274,604
55 4,274,605
117 4,274,606
163 4,274,607
192 4,274,608

CLASS 244

3.14 4,274,609
3.22 4,274,610

CLASS 246

34 R 4,274,611

CLASS 248

74 PB 4,274,612
150 4,274,613
243 4,274,614
343 4,274,615
459 4,274,616

CLASS 249

63 4,274,617

CLASS 250

223 R 4,275,293
227 4,275,294
4,275,295
4,275,296
239 4,275,297
255 4,275,298
271 4,275,299
304 4,275,300
326 4,275,301
330 4,275,302
342 4,275,303
373 4,275,304
445 T 4,275,305
548 4,275,306
551 4,275,307
4,275,308

CLASS 252

8.6 4,274,972
34.7 4,274,973
90 4,274,974
140 4,274,975
301.1 W 4,274,976
358 4,274,977
408 4,274,978
422 4,274,979
430 4,274,980
438 4,274,981
455 Z 4,274,982

CLASS 254

29 A 4,274,618
132 4,274,619
351 4,274,620

CLASS 260

4 AR 4,274,984
4 R 4,274,983
17.4 ST 4,274,985
22 CQ 4,274,986
23 H 4,274,987
23 XA 4,274,988
29.15 B 4,274,990
29.2 TN 4,274,989
30.8 R 4,274,991
32.8 R 4,274,992
37 R 4,274,993
40 R 4,274,994
42.14 4,274,995
45.75 B 4,274,998
45.75 S 4,274,999
45.75 W 4,274,997
45.9 R 4,274,996
112 R 4,275,000
112.5 LH 4,275,001
144 4,275,002
205 4,275,003
206 4,275,004
315 4,275,005
326.5 SF 4,275,006
343.9 4,275,007
345.2 4,275,008
380 4,275,009
4,275,010
410.7 4,275,011
421 4,275,012
504 R 4,275,013
780 4,275,014

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44 C 4,275,016
53 4,275,017
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98 4,275,019
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114 JP 4,275,021
114 TC 4,275,022

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118 4,275,027
126 4,275,028
152 4,275,029
250 4,275,030

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460 A 4,274,652
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668 4,274,654
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142 4,274,668

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147 4,274,571

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216 4,274,672

CLASS 297

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36.1 4,274,684

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333 4,274,689

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515 4,275,450
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900 4,275,455
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4,275,457
4,275,458

CLASS 365

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CLASS 366

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261 4,274,750
310 4,274,751

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122 4,275,461

CLASS 368

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187 4,275,463

CLASS 369

22 4,275,274
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286 4,275,100
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CLASS 371

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113 4,275,466

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382 4,274,756

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145 4,274,769
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232 4,274,774
251 4,274,775

CLASS 410

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110 4,275,032
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322 4,275,077
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33 4,275,081
92 4,275,082
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601 4,275,089

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204 4,275,204

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909 4,275,252

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D3—	39	259,596		210	259,609		310	259,622		24	259,635		150	259,647	D24—	8	259,659
D6—	36	259,597		245	259,610		311	259,623			259,636		181	259,648		11	259,660
	75	259,598			259,611		318	259,624		30	259,637		195	259,649		17	259,661
	76	259,599		246	259,612		428	259,625	D14—	53	259,638		212	259,650		27	259,662
		259,600	D7—	64	259,613	D10—	38	259,626		58	259,639		232	259,651	D25—	2	259,663
		259,601		70	259,614		109	259,627	D16—	10	259,640		246	259,652		56	259,664
	175	259,602		76	259,615	D11—	141	259,628	D18—	3	259,641		253	259,653	D28—	13	259,665
	177	259,603		94	259,616		144	259,629	D19—	51	259,642		254	259,654		22	259,666
	186	259,604		107	259,617		159	259,630		69	259,643	D23—	8	259,655			259,667
	191	259,605		164	259,618	D12—	57	259,631	D21—	23	259,644		69	259,656	D30—	10	259,668
		259,606	D8—	47	259,619		147	259,632		102	259,645		95	259,657		16	259,669
	195	259,607		394	259,620		155	259,633									

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6 :	4,274,886	4,274,619	4,275,395	4,274,405	4,274,848		4,274,581
	4,275,006	4,274,647	4,275,399	4,274,508	4,274,898		4,274,626
01 :	4,274,387	4,274,649	4,275,410	4,274,552	4,274,903		4,274,750
	4,274,838	4,274,659	4,275,415	4,274,651	4,274,957		4,275,455
	4,274,958	4,274,688	4,275,419	4,274,758	4,274,978	20 :	4,274,300
04 :	4,274,253	4,274,690	4,275,421	4,274,908	4,274,980		4,274,592
	4,274,254	4,274,697	4,275,424	4,275,090	4,275,027		4,274,644
	4,274,262	4,274,703	4,275,427	4,275,124	4,275,032		4,274,648
	4,274,263	4,274,706	4,275,452	4,275,153	4,275,167		4,274,990
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	4,275,107	4,274,820	4,275,097	4,274,818	4,275,338		4,275,388
	4,275,271	4,274,833	4,275,380	4,274,825	4,275,381	22 :	4,274,216
	4,275,272	4,274,835	4,275,457	4,274,846	4,275,382		4,274,760
	4,275,458	4,274,837	09 : 4,274,261	4,274,953	4,275,434		4,274,788
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	4,274,206	4,275,002	4,274,562	4,274,223	4,274,514		4,275,057
	4,274,225	4,275,015	4,274,692	4,274,231	4,274,599		4,275,074
	4,274,226	4,275,034	4,274,805	4,274,237	4,274,639		4,275,263
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	4,274,404	4,275,149	4,274,393	4,274,340	4,274,897		4,274,350
	4,274,406	4,275,150	4,274,438	4,274,401	4,274,968		4,274,388
	4,274,422	4,275,160	4,275,022	4,274,493	4,275,187		4,274,571
	4,274,437	4,275,180	4,275,073	4,274,532	4,275,205		4,274,637
	4,274,446	4,275,192	4,275,083	4,274,544	4,275,210		4,274,737
	4,274,455	4,275,212	4,275,181	4,274,574	4,275,245		4,274,742
	4,274,463	4,275,267	4,275,185	4,274,579	4,275,310		4,274,866
	4,274,475	4,275,270	4,275,225	4,274,580	4,275,347		4,274,984
	4,274,503	4,275,286	12 : 4,274,165	4,274,601	4,275,385		4,275,163
	4,274,512	4,275,300	4,274,179	4,274,613	19 : 4,274,201		4,275,175
	4,274,566	4,275,305	4,274,233	4,274,629	4,274,227		4,275,227
	4,274,583	4,275,315	4,274,246	4,274,630	4,274,302		4,275,343
	4,274,606	4,275,317	4,274,255	4,274,680	4,274,309		4,275,407
	4,274,608	4,275,336	4,274,266	4,274,682	4,274,328	26 :	4,274,186
	4,274,610	4,275,350	4,274,279	4,274,700	4,274,366		4,274,219
	4,274,616	4,275,364	4,274,354	4,274,770	4,274,469		4,274,257
	4,274,618	4,275,387	4,274,361	4,274,784	4,274,492		4,274,281

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